

# THE IRON AGE

New York, November 30, 1922

ESTABLISHED 1855

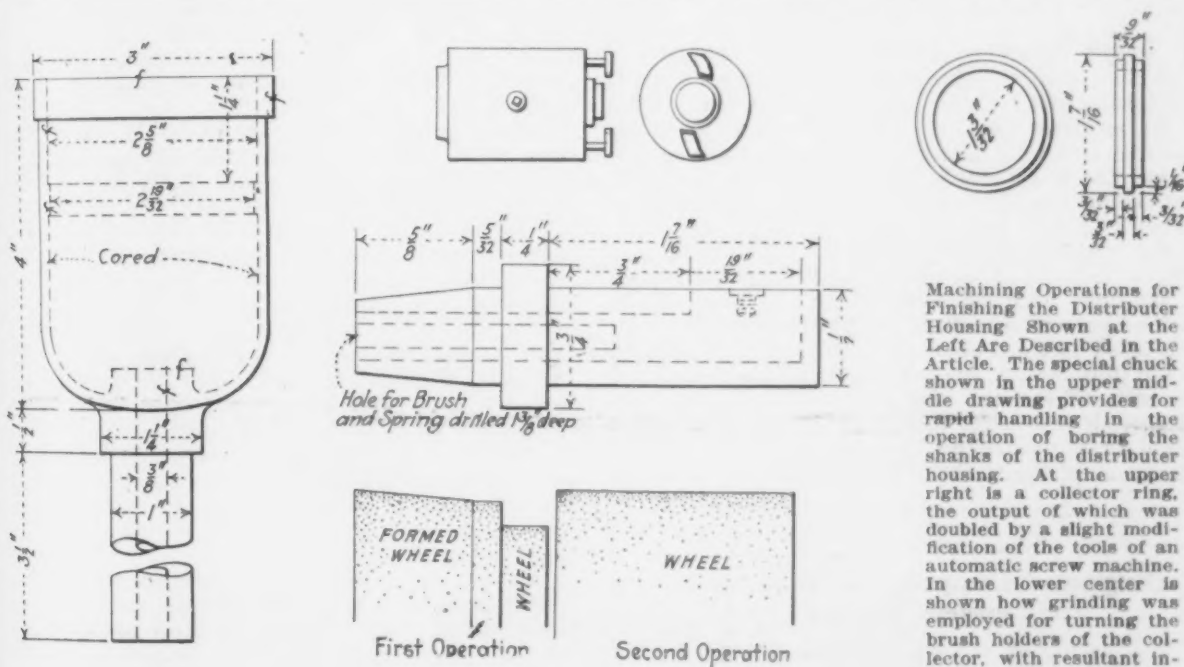
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## Savings Effected by Combining Operations

### Two Chuckings More Economical Than One—Output from Automatic Screw Machine Doubled—Different Forms and Diameters of Grinding Wheels on One Spindle

THE combination of operations formerly requiring separate positions in turret lathes; the combining of operations, or practice of multiple tooling in the various stations, in automatic screw machines; what is known as "straight-in" grinding, with the use

tools for the first operation, thereby utilizing that side of the turret for a two position operation. This sleeve is set forward or drawn back by means of a barrel-cam action, hand operated. After the sleeve has been used as location stop for the work, the chuck is tightened,



Machining Operations for Finishing the Distributor Housing Shown at the Left Are Described in the Article. The special chuck shown in the upper middle drawing provides for rapid handling in the operation of boring the shanks of the distributor housing. At the upper right is a collector ring, the output of which was doubled by a slight modification of the tools of an automatic screw machine. In the lower center is shown how grinding was employed for turning the brush holders of the collector, with resultant increase in output

of one wide face wheel, or several wheels of different diameters, to grind several diameters at once; all these are becoming more and more common. Some good examples of this practice have been developed in the plant of the American Bosch Magneto Co., Springfield, Mass., which manufactures magnetos, distributors and other motor car ignition products.

#### Six Hole Turret Used for Seven Position Operation

In machining distributor housings, it has found that two chucking operations on this particular piece are more economical than one. The casting was formerly chucked on the outside with the shank extending through the spindle of the turret lathe, and all operations, except turning the shank, were performed in that setting.

With the present method, the casting is chucked on the outside, the stop for setting its position in the chuck being a sleeve mounted on the bar which carries the

the stop withdrawn, and the first machining operation is performed without revolving the turret. This first operation is facing of the internal boss and turning a groove which becomes the chamfer for the hole drilled through the shank later from the other end.

The second operation is clearing the scale from the boss and surrounding portion of the housing. This is accomplished by a special tool which somewhat resembles a combination rose mill and hollow mill, each of its cutting edges having a contour best described as shaped like a hoof. Subsequent operations in this chucking are boring two diameters, facing and turning the flange.

In the second set up, the piece is handled in a turret lathe with a special chuck. This consists of a shell containing the operating mechanism and bearing a pilot plug for registering the casting from the finished bore. The chuck has two dogs or clamps which are cam actuated, the cam being operated by a key similar to

that used for the ordinary lathe chuck. These dogs are thrown in against the sides of the casting, then drawn back, so that the casting is forced against the face of the pilot plug and securely held. Operations are centering, drilling, boring, and rough and finish reaming. After this operation the work is passed to a plug gage for both diameters to check for concentricity.

#### Duplex Tool Set-up

The shank is turned and semi-finished in the next operation. The work is chucked from the bore and the shank is hollow milled on both diameters with one tool. The cross slide carries a turning tool to skim off any eccentricity left by the hollow mill and to turn fillets. The next tool in the turret is a turning tool for semi-finish, and the third is a facing tool. The other three holes of the turret are used for a duplicate set of tools, so that when once set up, the machine can run for double the work before tools require grinding and adjustment. The shank is finished by dry grinding. It is held on a roller grip mandrel in a plain grinder carrying a wide face carboided wheel. The hole in the shank is finished by burnish broaching in an air operated arbor press.

The tool set-ups for the operations described, in common with all tools in use, are tested in the development department on actual castings before being released to the shop.

An interesting method in handling this distributor is in use in the assembly department. The shells or housings are placed in racks or carriers holding ten in a row. These carriers slide in tracks along a conveyor bench from station to station, where various parts are assembled in them at the different stations.

#### Double Output on Automatic Screw Machine

A four spindle 1½-in. automatic screw machine is in use turning out collector rings, on which the brushes in the magneto ride. The tooling purchased from the manufacturer with the machine turned out one ring at a time. The Bosch company has changed the tooling so that the machine is now delivering two complete rings instead of one on each revolution of the spindle turret.

The material is brass tubing. At the bottom station, at the front of the machine, two rings are formed by the cross slide while the turret tool rough bores. At the upper station, front of the machine, the turret tools finish bore and break the corners of the first ring. At the third station, top rear of the machine, the cross slide cuts off the first ring and breaks the corner on the second; the turret then chamfers the bore of the second in this same position. At the fourth station, lower rear of the machine, the cross slide cuts off the

second ring, and stock is fed for the next cycle. These collector rings are then set into a molded insulating material, which is formed like a sheave, having the brass ring at the bottom of the groove. In this groove the brush holder, described below, is placed, with the brush riding on the brass collector ring, as the latter revolves.

Brush holders are made of hard rubber composition with a brass insert of rectangular section having a projection which is finished on the surface in a grinding operation. This insert is drilled in other operations to receive the brush and spring and is also drilled, counter-bored and tapped for a terminal.

In the first grinding operation a formed wheel is used corresponding in contour with the tapered nose and straight portion of the brush holder and this in conjunction with a straight face wheel of smaller diameter corresponding with the width of the collar, thus to reduce the tapered end and collar at the same time. In the second operation a wide face wheel is used to reduce the long straight portion of the brush holder. It is in this operation that the brass insert mentioned above is finished. This method of grinding has reduced time 50 per cent below the old method of turning, and also produces a better finish for the brush holder.

#### Seventy Per Cent Saved in Milling Hexagons

The Bosch Company is making spark plug shells, the design of which requires that they be made from round stock. This job was transferred to the Springfield plant from the Gray & Davis division at Cambridge. The method of milling the hexagons on these shells was in a fixture designed to hold six for a gang straddle milling operation. Due to misalignment in the fixture, it was found that only five shells could be handled at a time. The redesigned fixture in use at present is 15 in. in diameter and holds 18 of the shells.

They are held in place by means of small mandrels inserted through them. These in turn are tightened by binder screws in the face of the fixture. There are six of these binding screws, each effective on three of the mandrels. The fixture is manually indexed to three stations, completing the hexagon, as the milling cutters pass through the work at each station. While the actual time consumed is greater than with the old fixture, the saving, with an operator running one machine is about 42 per cent, milling time being about 7½ min. Total time is less than 10 min. floor to floor, per load. This production can be doubled when the operator is running two machines. The machine in use is a manufacturing milling machine with automatic quick return to the table.

### Westinghouse Company in Minneapolis Industrial District

The leasing by the Westinghouse Electric & Mfg. Co. of a six-story building in the Minneapolis industrial district, to serve as a combined sales, service and warehouse center, bring into relief the story of this industrial district plan. The proposition was explained to 250 business men of Minneapolis, who immediately subscribed the sum of \$1,000,000 to carry out the plan. Two hundred and fifty acres of ground were purchased on the eastern side of the city, 3 miles from the main business district. There existed in Minneapolis a belt line operated by the Minneapolis Transfer Co., which connected with all of the nine railroads entering the city. This belt line was operated in such a manner that the railroads did not make switching charges to each other to and from their respective lines. Thus the plan provided a means of distribution for less than carload lots and called for the establishment of warehouses in this district by jobbers and Eastern manufacturers.

A joint express office, freight station and telegraph office was provided at a convenient point, connected to the warehouses by a remarkable tunnel system. The less than carload lots are delivered to the freight station, where the material is loaded upon trucks drawn

by an electric tractor. In the same manner shipping is facilitated. Shipments of less than carload lots are loaded on the trucks and the transfer companies call for them with the tractor, which carries the goods to the freight station. A feature of the district is a restricted type of the character of the buildings. It is estimated that three to four million dollars has been expended in the development of the industrial district with no immediate outlook for dividends. The business men of Minneapolis appear to have invested the money for the betterment of Minneapolis.

A new type of multi-stage centrifugal pump has been developed by the De Laval Steam Turbine Co., in which the advantages of the double suction impeller are retained. This is made possible by the use of a specially formed casing which provides individual volumes for each impeller. One of these pumps is to be shown at the National Power Show to be held in New York in the week beginning Dec. 7.

The Bridgeport Manufacturers' Association, Bridgeport, Conn., has elected the following officers for the ensuing year: George M. Eames, president; T. Rice Davis and Sumner Simpson, vice-presidents, and R. G. Farrell, treasurer.



# Has Automobile Production Reached Peak?

Indications That 1922 Output Will Probably Break All Records, Including That of 1920—Building of New Plants Indicates Confidence

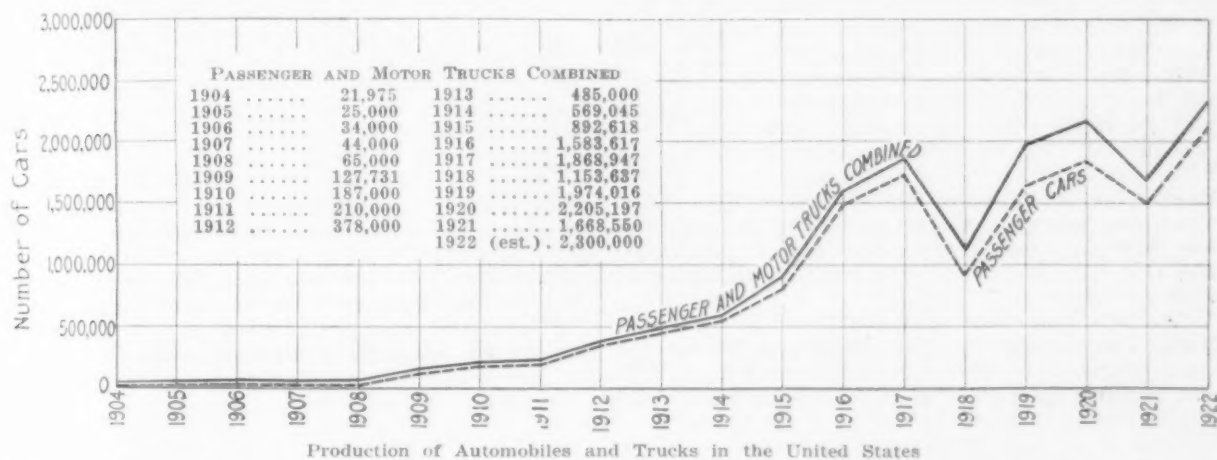
BY C. E. WRIGHT

THOSE prophets who have for several years been predicting that automobile production had about reached its peak will be doomed to another disappointment this year when the final production figures are compiled. Up to Oct. 1 the nine-months production showed a total of close to 1,900,000 passenger cars and trucks. Estimating the production for the last quarter of the year at 400,000, which is considered conservative, the total would be 2,300,000, as compared with the former record-breaking year, 1920, when 2,205,000 cars and trucks were manufactured.

During the current year the automobile industry will

The importance of the automobile trade to the manufacturers of steel and other metals is indicated by the fact that this year automobiles themselves took fully 4 per cent of the steel the country produced; 16 per cent of the copper; 20 per cent of the zinc and 25 per cent of the aluminum.

*Automotive Industries* is authority for the statement that the industry has been centralizing more and more in the hands of large groups since the formation of one of the large groups in 1911. The result is that to-day 10 companies produce 75 per cent of the motor vehicles. Two concerns, the Ford Motor Co. and the



approximate a total business of \$4,000,000,000, represented as follows: Cars, \$2,000,000,000; trucks, \$300,000,000; tires, \$800,000,000; accessories, \$600,000,000; parts, \$400,000,000. There are undoubtedly some duplications in these figures, but in the main they represent the enormous proportions of the motor-vehicle industry.

When an automobile manufacturer predicted at a banquet a decade or so ago that there would eventually be 5,000,000 cars owned in the United States, he was rated as an extreme optimist. To-day there are approximately 10,500,000 motor vehicles registered in the country, or one automobile for every 10 persons. California has one motor vehicle to every 5.16 persons.

The question has often been asked, when will the saturation point in automobile ownership be reached? Obviously there must be some point at which the absorption of automobiles will stop, but the increasing output each year, excepting 1918 and 1921, furnishes no indication that the peak of production and absorption has yet been reached. In 1918 the automobile industry was crippled by inability to obtain sufficient steel because of war needs; in 1921 it was crippled by the generally impoverished condition of the country due to business and agricultural depression.

## Expect Continued Increase

During times that were at all favorable the automobile industry has made a gain each year over the preceding year, and the building of new plants now under way indicates the confidence of automobile manufacturers that the country will go on buying cars at an increasing rate for some years to come.

Economy in production methods, enabling manufacturers to sell cars at lower prices, has of course opened up a wider market for the automobile. At one time it was, for example, a luxury on the farm; to-day it is almost a necessity. Yet there are millions of farmers who do not own automobiles.

General Motors Corporation, produce approximately 60 per cent of the automobiles.

## Increasing Demand for Closed Cars

Another trend emphasized by the same publication is the increased demand for closed cars, which is of importance to the steel industry because of the increasing use of steel for car bodies. Twenty per cent of the Ford cars are now of the closed type; 25 per cent of the Dodge output; 50 per cent of the Cadillac and 52 per cent of the Hudson.

The ordinary observer of motor car congestion in the large cities is entitled to feel, perhaps, that the limit has about been reached as to the number of such vehicles that can be accommodated. New York State, for example, has close to 800,000 registered automobiles. The automobile statisticians naturally look now to gains in those States which have not adopted the automobile as readily as other States. Florida, for example, made a gain of 33 per cent in one year in the number of automobiles registered. This year some of the Southern States have made surprising gains in the purchase of automobiles. The great farming States of the Mississippi Valley and the West still present large possibilities for automobile absorption, especially in view of the fact that the prices of so many cars are now within the reach of hundreds of thousands who could not afford to buy them at the higher prices prevailing since the war.

The sale of cars in some sections of the country has been held in check to a degree by the lack of sufficient service stations and good roadways. These things are now being remedied and the automobile industry looks to considerable gains in the sale of cars in sections which have not kept pace with the records of other States. For example, California, Iowa, South Dakota, Nebraska, Kansas, Colorado, Oregon and North Dakota all rank under seven persons for each motor vehicle, while some of the more populous States have relatively

a fewer number of cars. Pennsylvania has one car for each 12.6 inhabitants; New York one to 13.3 persons; Massachusetts, one to 10.7 persons.

The National Automobile Chamber of Commerce estimates that the production of cars in 1923 will equal and possibly exceed that of 1922. New manufacturing plants are in course of construction which will swell the output if the demand for the cars exists.

#### New Plants Being Built

One of the most ambitious programs is that of W. C. Durant, former head of the General Motors Corporation. In Flint, Mich., Mr. Durant's interests are building a plant for the Flint Motor Car Co., costing \$1,500,000, and at Lansing, Mich., the same interests are building new plants for the Star and Durant cars, which will give capacity for an output of 300 cars daily of the former and 150 daily of the latter. A plant for a Durant car is also being built at Flint, to have a capacity of 8000 cars a month.

The Chevrolet Motor Car Co., a subsidiary of the General Motors Corporation, is also engaged upon a large building program, including a new assembly plant of considerable size at Buffalo; another at Cincinnati and a third at Janesville, Wis. The last mentioned plant will be in conjunction with a new factory being erected by the Fisher Body Corporation, which will turn out from 100 to 150 closed car bodies per day.

The Fisher Body Corporation is expending its facilities in co-operation with the Chevrolet Motor Co. to give the latter bodies for a daily production of 2000 cars in 1923. The Fisher-Chevrolet plant in Flint will have a capacity of 400 to 500 car bodies daily. A Fisher plant at Flint will also be built for Buick cars. The Fisher company will also have body plants at Pontiac, Mich., St. Louis, Buffalo, Cincinnati, Oakland, Cal., and Janesville, Wis., all in co-operation with the Chevrolet company.

Work is under way on a plant for the Lafayette Motor Car Corporation, Indianapolis, adjoining the plant of the Nash Motors Co. at Milwaukee. It will cost \$500,000 for the initial units and additional units

to be built next year will bring the total cost to \$1,000,000.

#### Detroit Plants Enlarging

Dodge Brothers, Detroit, have started work on a large body and assembly plant. The Hupp Motor Car Co. will build a new manufacturing plant that will give it 50 per cent increased capacity. The Ford Motor Co. is contemplating the building of assembly plants at Jacksonville, Fla., and at Minneapolis, in the United States, and at Tampico, Mexico. The Canadian plant capacity will be doubled by 1923 through additional factory buildings, and the Manchester and Cork plants in the British Isles are being extended.

The Lincoln Motor Co., Detroit, now controlled by Henry Ford, is building a one-story addition, 1600 ft. long, which will increase its production.

The Columbia Motors Co., with the addition of the Saxon plant at Detroit, is in a position to triple its former production.

C. H. Wills & Co., Marysville, Mich., manufacturers of the Wills Sainte Claire, are extending their manufacturing space.

The Gray Motor Co. has started erection of an additional assembly building in Detroit, which will give it capacity there for 200 cars daily: in addition assembly plants at Oakland, Cal., and Albany, N. Y., planned for operation before the season of 1923, will give a production capacity of about 100 cars daily at each plant.

The Detroit Air Cooled Car Co. has purchased an assembly plant at Wayne, Mich., and will begin production in December.

The Commander Motor Corporation, 49 Wall Street, New York, has acquired a plant in Chicago and will later take over a plant in Milwaukee with 40,000 sq. ft. to manufacture a \$5,000 car.

The Anderson Motor Co., Rock Hill, S. C., announced recently that plans to expand have been approved.

In addition to this expansion of automobile building plants, plans have been announced by several makers of parts and accessories for larger capacity to take care of 1923 business.

## STEEL IN THE ARMY

### Secretary of War Weeks Tells of Constructive Activities in Industry

Speaking on the subject "I Didn't Know," Secretary of War Weeks recently delivered an address before the Boston Chamber of Commerce, and in an extremely interesting manner described the many constructive activities of the Army. Dealing with its relation to the steel industry, interchangeable manufacture and the Taylor Scientific Management system, the Secretary of War said:

"Do you know that the Army started our steel industry, guided it through its early development, and, in co-operation with the Navy Department, stimulated it throughout its expansion to the present gigantic proportions? . . . The dominating influences in building up steel have been the provision of markets, the increasing adaptation in employment, and the specifications for design. The Army was the original market for steel products—offered an even greater field for the use of steel—and led the entire industry in specifications for design. High grade steel, as we know it to-day, dates from the Civil War when the Army called for superior quality in gun metal. In 1880 the requirements for high carbon steel in making guns were fully 50 per cent more severe than were the general industrial specifications. The Ordnance Department introduced alloy steels in the manufacture of Army material, and prescribed the use of nickel steel at a time when there were very few commercial uses for nickel steel in the entire country and when only two or three commercial concerns were capable of its manufacture. In 1875, the Board of Investigation at the Watertown Arsenal established a program of investigation and built an emery testing machine that

was the largest in the world. This machine is still in daily use and was only recently superseded in its rank as the largest in the world. The work of Watertown Arsenal was truly pioneer work in this country, and it has a tremendous influence in stimulating similar investigations on the part of technical schools and colleges. Until the creation of the Bureau of Standards, the Arsenal was recognized leader in metallurgical study and it is even to-day doing very original work which must have a noteworthy effect in the future."

### Extensions to Ashland Plant

The directors of the American Rolling Mill Co., at a meeting in Middletown Nov. 20, decided to go ahead with the extension to the Ashland works, and evolved a plan of financing the improvement which will be publicly announced as soon as a statement can be prepared for submission to shareholders. President Verity reported to the meeting that the company's plant had been running at full capacity all summer, and a very satisfactory showing had been made.

Frank W. Brooks, chief engineer William Swindell & Bros., Pittsburgh, recently addressed the Chicago Foundrymen's Club at the City Club, Chicago. His subject was the Multiple Melting of Steel. With the aid of lantern slides he described a multiple electric furnace installation. Two electric furnaces are mounted on a turntable and when one is pouring the other is melting. The advantage of the scheme lies in the fact that the same electrodes and electrode lifting apparatus may be used for both furnaces and inasmuch as one furnace is connected with the current practically at all times, the load is fairly constant. Economies lie in labor, equipment and current rates.



# Founders Urge Change in Immigration Law

National Association Says Present Act Is Working an Injury to Nation—Annual Convention in New York Has Interesting Program

**D**ECLARING that the present immigration act is "working an injury to the nation, without any compensating advantages to our citizenship," the National Founders' Association, at its twenty-sixth annual convention, held Nov. 22 and 23 at the Hotel Astor, New York, resolved to petition the President and Congress so to amend the act as to enlarge the American labor supply.

"Unless this is done," said the resolution, "the economic conditions indicate that the inability to carry on the great body of preliminary operations in forest, factory, farm and general construction is likely to lessen steadily the demand for skilled craftsmen and increase constantly all of the underlying costs of production and transportation."

The subject of immigration was discussed in the annual address of the president, William H. Barr of Buffalo, whose address in part was reported in last week's issue of *THE IRON AGE*, page 1374, and also from the floor of the convention, it being indicated as the sentiment of members that a serious labor shortage will restrict the country's prosperity unless a greater supply of common labor becomes available soon.

The full text of the resolution follows:

WHEREAS, the present immigration act was frankly conceived and enacted to meet post war conditions, which no longer exist, and establishes a purely arbitrary restriction without basis of experience,

AND WHEREAS, the record of its operation shows that it is now working an injury to the nation, without any compensating advantages to our citizenship, therefore:

BE IT RESOLVED, that it is the sense of the National Founders' Association, in convention assembled, that the Congress should replace our present negative and unscientific handling of the alien, with a definite policy of immigration.

We suggest as the fundamental principle of such policy the historic recommendation of Madison to the first Congress: "To welcome every person of good fame who really means to incorporate himself into our society," to reject all who will not be "a real addition to the welfare and strength of the United States."

Our National policy ought to distinguish the requirements for admission from those for naturalization. We believe admission should be denied to the chronic diseased, the criminal, the defective, those likely to become public charges, all who oppose any form of government and any who would effect political change by force, or are incapable of citizenship. We believe effective tests to this end should be applied to the alien so far as practicable, where his passport is viséd, or at the port of embarkation, and ought not to wait upon his arrival at our ports of entry.

We believe the Federal Government should assert the right and assume the responsibility of controlling and supervising the distribution of the immigrant. The requisite direction may be had, and accurate information of the national economic needs and opportunities obtained through systematic official and private cooperation, State and Federal. It is due the immigrant that he be fairly informed of employment opportunities in agriculture and industry that the needs of the nation may be definitely and intelligently met. Through the same agencies the process of naturalization may be practically stimulated and aided.

We believe a working knowledge of our language and a practical understanding of our form of government ought to be a prerequisite to naturalization, and the bestowal of citizenship should be accompanied by formalities that emphasize its privileges and responsibilities.

When the qualification for citizenship has been established,

naturalization should be regulated exclusively through federal action.

We urge upon the Congress the immediate need for action, that while protecting the quality of our citizenship, enlarges our labor supply. Unless this is done, the economic conditions indicate that the inability to carry on the great body of preliminary operations in forest, factory, farm and general construction, is likely to lessen steadily the demand for skilled craftsmen, and increase constantly all the underlying costs of production and transportation.



WILLIAM H. BARR

## William H. Barr Re-elected President

The election of officers resulted in the unanimous selection of William H. Barr of Buffalo to succeed himself as president. For vice-president the association selected Charles L. Taylor, Taylor & Fenn Co., Hartford, Conn.; secretary, J. M. Taylor, Chicago (re-elected); treasurer, Chicago Trust Co. O. P. Briggs of Minneapolis, Minn., was unanimously chosen to continue as an honorary member of the Administrative Council, and the usual district committees were elected.

## Commissioner McClintock's Report

A. E. McClintock, commissioner of the association, read his annual report, which in the main dealt with labor matters within the foundry industry. He dwelt particularly on the scarcity of skilled molders. His report in part follows:

"During the past year, the Administrative Council authorized that support be given to nine members, located in six towns, and from which 222 molders were on strike. At four of the shops, the strikes are now inactive and conditions normal. While the other five are still requiring aid from the association, in every instance will these strikes be combated to a successful conclusion and an unconditional victory.

"It is interesting to record that seven of the nine shops above mentioned are devoted to the manufacture of heavy and complicated castings, and for many years have been closed union shops. These are now being definitely added to the open shop list.

## Condition of International Molders' Union

"The receipts and disbursements of the national treasury of the molders' union for the twelve months ending Sept. 30, 1922, are as follows:

Income .....	\$559,350
Disbursements:	
Strike benefits .....	\$194,100
Management and other expenses .....	246,150
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	440,250
	<hr/>
	\$119,100

Average paid membership for year, 29,000, as compared to 61,000 two years ago.

"As the pendulum of business swings upward from depression, the foundry industry is again confronted with a shortage of skilled molders. Due to present immigration laws, and the unprecedented shortage of unskilled labor, this is a serious situation, and one which in all likelihood will become much more acute before there is improvement.

"With the foundry industry operating at about an average of two-thirds capacity, the great majority of shops have already re-employed all of their former molders still available, and the problem is where to obtain additional men as needed. Unless the signs fail, trade will continue to improve, demand for molders increase, wages will be bid up first by individual shops, and then by towns, and large numbers of workmen will

be constantly idle, migrating from place to place, seeking a higher bidder.

"It has been my observation that the foundryman most emphatic in his condemnation when unable to readily obtain a full quota of molders will more often than otherwise be found to be doing little or nothing in the educating of boys or men in the molding trade in his own shop.

"While the subject of apprentices has been discussed in this report year after year for many years past, it is my conviction that the time has arrived when prompt and vigorous action should be taken and a greater effort than ever before be made to arouse foundrymen generally to a realization that unless there is a very large increase in apprentices, every foundry will suffer.

#### Predicts More Molders' Strikes

"The scramble to obtain molders has now started, and the professional agitator is again at work telling the men that higher wages for less work are offered elsewhere. It does not require much vision to appreciate that we are very shortly approaching a time when from little cause, or no cause, molders' strikes will be frequent. As one of our distinguished railroad executives recently said, labor is now "professionally organized," and very largely in control of professional leaders. It is to the advantage of these leaders to foment strikes.

"To those familiar with the industry, the fact is apparent that the foundry business is not attracting to itself men of sufficient caliber, or who are big enough to become superintendents and foremen.

"To-day nearly all foundry executives are promoted from the sand heap. Many lack education and executive ability, and are not sufficiently progressive to utilize to the fullest extent such mechanical devices as have been perfected, and as a consequence the foundry business does not progress in keeping with other lines.

#### Engineers Become Foundrymen

"Some time ago, the association began showing moving pictures at various engineering schools, and after each exhibition the students were given a talk, trying to induce them to see the possibilities in following the foundry business. At first no impression was made, but this year quite a number of graduate engineers got in touch with us, stating that they had decided to make the foundry their life's work, and wanting to know how they could get positions that would enable them to do so.

"In conversation with these young men, we found certain conditions that will have to be met in order to induce them to go into the foundry business. First, let me say, they are a splendid type, not afraid of hard work, dirt, or the drudgery incident to foundry operations. They all feel, however, that the time has come when they must be self-supporting, and as a consequence the starting salary must be sufficient to enable them to do this.

"The boys are perfectly willing to spend about a year in molding, or doing any other kind of work which may be given them. They all feel, however, that at the end of a year they ought to be given some minor executive position, as they do not expect to train their hands sufficiently to enable them to become mechanics, and they feel that they can master the principles involved inside of a year.

#### Starting Salaries

"In investigating further, we found that concerns in other lines are sending men to the universities to hire these young men, offering them from \$100 to \$150 per month as starting salary. They then train them in a short training course to their particular line of work, and put them on in such capacities as charge of testing apparatus, assistant foremen, and positions of an executive nature throughout their plants. From there on, the boy's progress depends entirely on his merit.

"It would seem as though the money that any firm might spend in developing these young men would be well invested.

"If any number of our members would signify a willingness to hire these young men and develop them along the lines here suggested, the association could easily become a clearing house and keep in touch with the universities and get such men as elected to go into the foundry business in touch with the different firms. This plan would cost the association very little, and might be a means of injecting some high-grade men into the business, where the need is becoming daily more apparent.

"The secret of production is enthusiasm and loyalty on the part of the workmen. Experience has demonstrated that the best way to get these elements into an organization is through the foreman. As the employer's representative in daily contact with the workmen, he has an opportunity to play an important part in industrial leadership. The development of foremen and making sure that they are properly informed, is of great importance in maintaining industrial peace.

"The recent railroad and coal strikes have done much to educate the public in industrial controversies. Slowly the general public is coming to realize that it is they who pay the bill. Shorter workday, opposition to production increasing machinery and appliances, restrictions on output, are all paid for by the consumer. The open shop, with freedom of opportunity, is better understood than ever before. Truth and right thinking will ultimately prevail, but not without further ignorant opposition and conflict.

#### Pioneer in Open-Shop Movement

"This association is a pioneer in the open-shop movement in America. For a quarter of a century you have been banded together by the firm conviction that the principles of the open shop are right in theory and right in practice. No organization of business men has ever backed their conviction with more time, energy or money. Time after time professional labor agitators have decreed that from then on all should wear the union yoke, but this association has stood steadfast. We hold to the idea that men should be rewarded according to production, and not according to time. We maintain that a man has a right to bargain individually just as he has to elect to bargain collectively; that he has as great a right to have a bargain made with him as to have one made for him; and that the Constitution of the United States still protects him as fully in his right not to strike as it does in the right to strike.

"These things are fundamental, and there is need that they be repeated over and over again, until they are as commonplace among the men in the shops as they are now with the employers.

"Our labor problems are largely due to the fact that industrial leadership has passed from the employer to the professional agitators, whose economics are unsound and false. The employer realizes this condition, and the task before him is to again assume the leadership of his men. The workman must have driven home to him the fact that the standard of living is based on production and consumption, and not as the labor agitator would have him believe—on less production and more pay.

#### One Way to Prosperity

"Increased individual production is the road to plenty, prosperity, and a higher standard of living for a people or a nation, and there is no other way. No man need apologize for speaking the truth. In demonstrating to his workmen that unionism is based on a philosophy which is false and untrue, and followed to its ultimate conclusion leads nowhere, the employer is doing the kindest of service to his fellow-man. The employer knows these things, but the workmen have been led to base their thinking on a foundation which is false, and not made of facts. While the task is large, it is not an impossible one. It is my strong belief that herein lies the way to improvement in industrial relations.

"As has been stated many times before, the success of an open shop depends on making it a better place to work than a union shop. A shop where there is opportunity for large production, and where pay is measured according to output and not according to time con-



sumed, will continue to triumph. As in the past, so it will be in the future, that greater and greater reward shall come to him who lessens the cost of service."

The report of the secretary, J. M. Taylor, covered the financial condition of the association and dealt with various matters of association routine business.

#### Overriding the Supreme Court

James A. Emery, Washington, general counsel of the association, delivered an inspiring address on "The Proposal to Destroy the Judicial Power," in which he discussed the agitation in some quarters to give Congress power to override the decisions of the United States Supreme Court. He argued strongly against such action. He said that this would destroy the judicial power of the highest court and make every great question which comes before that tribunal for adjudication one of politics rather than law. He pointed to the ease with which the public mind can at times be swayed, sometimes in the right direction, but often in a wrong direction, and said this would give an instability in government which would endanger the principles upon which the republic is builded. He went into the history of the Constitution and the creation of the Supreme Court, and held that there is nothing in history to show that the framers of the Constitution ever intended that the power of Congress should supersede that of the Supreme Court.

H. J. Boggis, chairman committee on new membership, reported that despite rather unfavorable industrial conditions, the membership of the association continues favorable, with encouraging prospects for next year.

#### Achievements and Problems of the Foundry

D. R. Wilson, vice-president Wilson Foundry & Machine Co., Pontiac, Mich., in collaboration with Henry M. Lane, foundry engineer, Detroit, presented an illustrated address on the company's foundry and its methods. About 80 lantern slides were thrown on

the screen showing the equipment and the foundry practice which have made this plant one of the most efficient in the United States. President Barr, in commenting on the presentation afterward, said that the Wilson foundry was the last word in efficiency and that probably not more than eight or ten foundries in the entire country even approach it in general excellence. It was decided to print the entire address, with photographic illustrations, in a pamphlet to be gotten out by the association.

William M. Taylor, Chandler & Taylor Co., Indianapolis, discussed the apprenticeship question and called attention to the questionnaires recently sent out by the New York State Department of Education, seeking information as to the advisability of enacting a State law governing apprenticeship training. Mr. Taylor said that in some places vocational education is falling down and that efforts will have to be made to keep up the right kind of training or skilled molders will become almost extinct. They are becoming fewer in number each year and no adequate means has yet been found to bring in new men and properly train them. The New York State proposal is to appoint an advisory committee composed of employers and employees to establish standards of apprenticeship training, and Mr. Taylor questioned as to whether this is a desirable proceeding.

In the discussion which followed Henry M. Lane, Detroit, told of work he had done years ago in writing a course of instruction in foundry practice for one of the large correspondence schools. He said that this course was by no means perfect, but up to that time it was the only serious effort that had been made to teach foundry workers the principles of their craft. He believed that the National Founders' Association could undertake successfully a program of correspondence instruction, and it was decided by the members to empower the president to appoint a committee to go into the whole subject thoroughly and recommend action.

## President Loree and Others on Vital Questions

L. F. LOREE, president Delaware & Hudson Railroad Co., described the railroad situation, giving in brief the history of the relations of the railroads to their employees during the war and up to the present time. He told of the many concessions that had been made to the railway employees during the war by the various Government officials and boards, and particularly of the policy of the Labor Board and of the efforts to readjust wages that have been made this year. He described in a very interesting way the method of taking strike votes, which he declared to be farcical. He said that when the votes are handed in by the employees, each man writes his name on his ballot, and the labor officials are thus enabled to know how every man votes. The rule is that the men vote 98 to 2 in favor of strike.

Referring to the shopmen's strike, Mr. Loree said that he was greatly surprised that so many men quit work. The percentage in the case of his own railroad was about 80, although the men had no grievance. To-day the railroad has 110 per cent of the force employed at the time of the strike. This is due in part to the fact that more business is being done, and also to the fact that many of the new men are not as efficient as the old ones and more are required to do the same work. He said that locomotive equipment will not be in first-class condition prior to next July. Locomotives as a rule are overhauled once a year. Last July 18.5 per cent were in bad condition, and in October 24.7 per cent.

President Loree expressed the opinion that there is still danger of trouble among the railroads that did not settle the strike on the right basis. The companies which adhered to the right principles, and particularly those that have organized company unions, are not exposed to danger. The men are contented and glad to continue under present conditions of employment. He expressed the conviction that many union men are

praying for deliverance from the unions and are glad to go into an organization which is fairly conducted. He described in detail the organization of the union of the Delaware & Hudson Railroad.

In conclusion, President Loree spoke of recent elections, saying that they afforded the latest evidence of the tendency of people in this country to swing suddenly from one side to another, because they did not know what they were voting for. He said that this country cannot tolerate a secret, oathbound, hooded organization, but he paid a tribute to the Fascisti of Italy, saying that we should take off our hats to the men of Italy who were willing to go out, not in secret, but openly and courageously, to serve their country. If we could have such a spirit in this country and enough men willing to serve in that way, our troubles would be over.

#### The Human Machine

"The Physician in Industry" was the subject of an address by J. J. Moorhead, M.D., chairman Conference Board of Physicians in Industry, New York. He rendered distinguished service in war time, and is just as deeply interested in serving his fellow men in times of peace. He made a strong plea for giving at least as much thought and attention to the human body as to the machines which the men operate. He said that machines are built to certain specifications, and that men should be required to conform to certain specifications as to physical condition. Men afflicted with any disease that is communicable should be prevented from associating with others, partly for the sake of their associates, and partly for their own sake. He said that very often men who have various diseases in their incipency can be cured with proper attention, if the life extension principles are followed.

Dr. Moorhead gave very interesting statistics pub-

lished in the report of the Surgeon-General of the Army as to the results of physical examination of the 4,000,000 men who were enrolled by the United States for the great war. He said that 47 per cent of all those examined had physical defects. The largest percentage of defective men was 64, that of the men examined from Rhode Island, while Kansas led all the States, having only 35 per cent of defectives. He attributed the splendid showing of Kansas largely to the fact that the people of that State are natives and spend much time in the open air and the population is not congested, while in Rhode Island a larger percentage is foreign born, and the State is more thickly populated. In cities of the country, the defectives were 51 per cent, and in rural communities 44 per cent.

#### More Altruism Demanded

John E. Edgerton, president National Association of Manufacturers, spoke with great earnestness on the open shop. He said that while there is a lack of appreciation on the part of manufacturers of the importance of the open shop, the greatest trouble is that there is not enough courage. Owing to a lack of individual effort, the necessity of organized effort is imperative.

Mr. Edgerton urged that manufacturers bolster up their courage and get a new vision. While he had been rather downcast in regard to the results of the recent election, he knew that if the election resulted in greater activity of those who are opposed to dangerous tendencies in our national life, it would turn out to be a blessing. He said that there are two classes of manufacturers who are impeding progress: Those who are

too quick to compromise, and those who have narrow vision and look to self rather than to the welfare of others.

Mr. Edgerton told in some detail how he encourages personal contact between the management and the men in his own plant, and he vigorously urged that employers make more effort to know their men. He believed that if manufacturers would show more interest in the welfare of their men, they would obtain greater loyalty from those whom they employ. He said that he was conducting a closed non-union plant. While he did not deny the right of men to organize, he did not feel compelled to recognize organized labor. He had been fortunate in getting all the non-union labor that he required, and he believed that if men could be excluded from a plant on account of being physically diseased, they should also be excluded for mental or moral diseases. If an employee is not loyal to his employer, he certainly ought to be excluded.

In conclusion, Mr. Edgerton remarked that he would like to see one more association added to those already in existence—a National Obligation Association. He said that there is too much talk about rights and too little about obligations. He had hoped that when the boys returned from France, after offering their all to their country, they would show an unselfish disposition and would continue to practise giving rather than getting. He was disappointed in the disposition which had been shown by the soldiers to get as much as possible from the Government. He believed that manufacturers should lead in encouraging loyalty to country, in insisting upon obligations being carried out and in more unselfish service being rendered.

## President Church Condemns False Principles

Praises Business and Political Leaders Who Have Contributed  
to the Greatness of the Country and Happiness  
of the People

AT the convention dinner, Wednesday evening, there was only one speaker, Col. Samuel Harden Church, president Carnegie Institute, Pittsburgh, who delivered a scholarly address on "Authority in a Democracy." Before becoming connected with Carnegie Institute, Colonel Church was for many years in the railroad business, holding highly responsible positions with the Pennsylvania System. He was enthusiastically greeted, received close attention and was heartily applauded at the conclusion.

"Authority in a democracy must rest in the sound leadership of the people, and without capable and talented leadership there can be neither prosperity nor happiness for the nation," said Colonel Church. "If we could all only understand the meaning of leadership, and of the authority that goes with it, we could reach the solution of our troubles much more quickly. I remember, when I was a boy, hearing Henry Ward Beecher deliver a lecture in Pittsburgh, and only one sentence of that address has remained in my mind. It was this: 'Whenever you hear a man proclaiming that he is as good as the next man, always turn around and see who the next man is!' I have always thought that the safeguard of our democracy was embedded in that maxim. Our forefathers established a representative form of government for this country based upon their belief that the people would choose superior men to be their leaders. Yet, in our political life, we are constantly met with the spectacle of the man who has failed in every undertaking in civil affairs, but who says 'send me' to the offices of highest responsibility in the public service. In all other human undertakings the masterful man is a pre-requisite to the success of the enterprise. We have a great population in Pittsburgh, but we could never have had our steel mills there without Carnegie and his associates to behold the vision and take the risk. America could never have had the stabilizing institution of the Steel Corporation without Morgan to organize it and Gary to manage its

ripening years. We could never have had the railroad system, which is the wonder of the world, without Vanderbilt and Garrett and Edgar Thomson and Cassatt to build it over barren mountains, and across surging rivers, and through the savage wilderness when only their faith in their country rescued such an investment from madness. We could never have assuaged the hunger of our people, occupying a vast continent, without the McCormicks and the Studebakers to harvest the mighty crops with their wonder-working machines. And we could never have worked out the problem of food distribution for our enormous territory without the aid of the meat packers who have been good servants of the nation there at Chicago.

#### Selecting Real Leaders

"These great constructive achievements are due to leadership and the authority that comes from leadership, and if our people would use the same care in choosing our public servants that they do in selecting the real builders of the country, the return to happiness would be more quickly accomplished. The doctrine that one man is as good as another in all the affairs of life was sadly shaken by those pregnant statistics which were assembled when we called 4,000,000 men into the army to stop Germany's conspiracy to murder the world. The men were graded from A to F according to their intellectual stamina; A and B representing superior men, C and D ordinary men, and E and F inferior men. If we apply the results of these striking tests in their average bearings to the nation, we can get a working theory of the mental capacity of our whole people. If, for convenience, we call the total population 100,000,000, we find that 50,000,000 of our people have the mentality of children of 12 years, and that 35,000,000 more have the mentality of 14 years, while 10,000,000 are of high intelligence, and the remaining 5,000,000 possess the natural ability and genius, and are capable of acquiring the



superior training necessary to fit them for great leadership.

"I know of one railroad company which made a secret but thorough canvass of 1500 clerks in order to find one man among them who possessed the qualifications—intelligence, tact, order, discipline and personality—to fit him to be an assistant secretary. I have within the past few weeks seen a list of 15 colleges and universities, some of them among the greatest in the country, which are looking for presidents, yet some of them permit one, two or three years to elapse without making a choice because the exceptional man cannot be found, or if found is not available. I know of two industrial establishments in Pittsburgh, both fabricating the same things, and each capitalized for not less than \$5,000,000. One of them is efficiently officered with a capable man on every part of the work, and has been successful from the start. The other, with a newer and better plant, but without an efficient organization, has never made a dollar of profit.

#### After Cleveland Came Demagogues

"In our political history we are illustrious only where we have had great leaders. In that brilliant group at the time of the Revolution there is abundant evidence that Washington was the one man indispensable to success. In the Civil War it was Lincoln whose patience and faith, trying out one man after another, finally guided the armies to victory. When Cleveland came he interposed his strong will against the unthinking passion of the crowd, and saved the country from an overturn. After Cleveland there came an epoch of demagogues, under showy and clever leadership, preaching that duly elected public servants were to be pulled down from their lawful seats upon the caprice of the crowd, and that judicial decisions based upon the fundamental law of the land should be annulled by public clamor. Our people were insidiously impressed with the belief that success in life was criminal, that great fortunes were great thefts, that the foundations of business should be undermined, not because business was dishonest, but because it was big. Out of that false and meretricious philosophy there came a train of disasters which paralyzed the railroads, unsettled the stability of business, destroyed the credit of our industries, halted our national progress, and transformed capital from a creative and courageous servant of the nation into a timid and shrinking object which takes fright whenever new enterprises are proposed.

#### Troubles After Other Wars

"The pursuit of happiness is the main object of human progress, yet we are told that the people are not happy. But we find our hope for better things in reading the history of all great wars, for we shall see that from the time of Caesar, every war has been followed by an overturn of constituted authority, an attack upon property through confiscatory taxation, and an unflinching demand of the home-coming army upon the purse of the nation. In Cromwell's time after the Civil Wars in England had ended, there arose an organization known as the Levellers who attempted to distribute all the wealth of the nation on an equal per capita basis, and to reduce the social state of the people of England to the condition of the most wretched and ignorant person in the land. Cromwell encountered that organization in the field and disposed of it in a practical fashion. In France 150 years later the mob started upon a similar undertaking, and Carlyle tells us that a young major of artillery named Napoleon Bonaparte met the French Revolution in the streets of Paris and put an end to it with a whiff of grapeshot.

#### Two Adventurers Fail

"In our time the two adventurers who have brought humanity to its dregs in Russia are reaching the logi-termination of their experiment. It was a repetition of the movement of the Levellers of Cromwell's time, and of the fanatics who aimed at greater madness in Revolutionary France. But it has failed miserably and with misery to all the vast millions who were subjected to it, and it has shown the world once more

that men who lead humanity downward instead of upward must inevitably attract into their retinue those four horsemen whose appalling ride brings war, famine, pestilence, and death unto all the nations. We are being called upon to support the people of Russia from starvation. It is a merciful task, but every dollar we spend in that way preserves Bolshevism from its final fall.

#### Italy's Change for the Better

"And now, humanity has once more turned on the upward march. There in Italy we see a palpable and dramatic change for the better. There were many signs of decadence in Italy. The Government-owned railroads were the worst the world has ever seen. Other public utilities were wastefully administered. Public credit was declining. Integrity was melting under a loose system. Voices were crying out for the confiscation of property. Labor was trying to seize all. And then there came through the gates of Rome a black-shirted man, without sword or gun in his hand, who told the ministry that Government means life and honor and property and happiness, and that he is going to give Italy such a government. And with a purpose like that in his heart, no man dared to stop him, and in one hour he became the master of an empire, his leadership to endure as long as his heart and his integrity remain sound.

#### America's Imperative Task

"And in this great work of restoring authority in a disordered world America has her imperative task. We have not lost faith in our leaders, but we must give them faith and more faith. We must come once more to the recognition of exceptional men, and give weight to the authority of their knowledge and experience. We must call them back into the doing of mighty tasks, and permit them freely to reap the rewards of their courage and genius. We must refrain from our national passion of trying to make the world virtuous by acts of parliament, and repeal a thousand laws which hamstringing our civilization. We must realize that only by the upbuilding of character can a nation be made righteous.

#### Encouragement in Better Men

"And when we view the troubled world we must compassionately enter her councils and take part with her in the discussion of her enormous difficulties. We should give what aid we can in the restoration of her normal way of life. And there is another thing we should consider. The other nations owe us great sums of money, a portion of which was given to them for their own national purposes, and is thus a legitimate obligation which should be paid. But another portion of these sums was advanced to enable them to keep up the fight while we were tardily preparing to take our place on the battle front. It is a question of conscience whether some part of this debt ought not to be remitted—not for the enlargement of foreign armies and navies, not for the attainment of dangerous national aspirations—but it may well be committed to men like President Harding and those two great secretaries, Mr. Hughes and Mr. Mellon, whether the time has not come when America, through an act of superlative statesmanship, cannot employ a part of these vexatious funds in the purchase of an enduring international peace."

George K. Elliott, chief metallurgist of the Lunkenheimer Co., Cincinnati, was the principal speaker before the November dinner and meeting of the Cincinnati Association of Purchasing Agents held Nov. 21. His subject was "Non-ferrous Metals and Their Alloys." Plans were completed at this meeting for the December meeting, which would be for entertainment purposes exclusively, and some novel features are being prepared.

Dayton Steel Foundry Co., Dayton, Ohio, has just purchased a 3-ton Moore rapid lectromelt furnace for its steel foundry.

### Time Saved in Accurate Drilling Job

One of the important operations in the manufacture of accounting machines is the making of the die plates used in punching the cards. Close accuracy is necessary because in the multiple printing each punch must accurately enter each die. Further, the cards must be accurately punched in order to register properly in the electric tabulating machine.

The die plates are of tool steel varying in thickness from  $\frac{1}{8}$  to  $\frac{3}{8}$  in. The plate shown in the illustration is  $3\frac{1}{2}$  in. by  $8\frac{1}{2}$  in. overall, and has 45 holes the long way and 12 rows across. In machining, the question of cutting down time for drilling and the matter of accuracy were the important considerations. The tolerance between the two extreme holes was plus and minus 0.002 in., any two adjacent holes not to vary more than 0.0005 in. The holes being too close to drill adjacent ones, the plan finally worked out was to have each of the nine spindles drilling every fifth hole, five operations completing each row. The plates are now finished in 22 min. from floor to floor, as against the previous time of 3 to 4 hr.

The drilling machine used was a standard unit of the Hoefler Mfg. Co., Freeport, Ill., a detail view of which is shown in the accompanying illustration. The die plate is located on the upper table of the indexing jig, which has an oil basin for cutting compound. Accurately located dowel pins permit easy replacement of the plate if it is removed. This table is mounted on a compound table, which accurately moves at right angles. The threads on each screw were cut so that either one turn or a multiple gives the exact distance to be moved over. In view of the necessity of holding the finished work to very close limits, an interesting problem arose in the cutting and testing of the lead screw. Great care was also necessary in scraping in the sliding members.

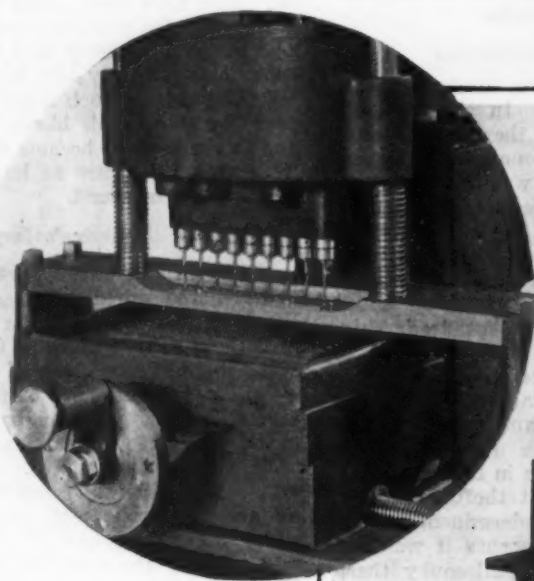
Across the top of the jig a heavy steel plate is carried, in which the liner and slip bushings are carried. These serve to guide the drills as near the work as possible in order to maintain the accuracy required. Two heavy hardened and ground guide rods are mounted on the plate and serve to keep the head and jig in alignment at all times. The head itself is counterbalanced in the column of the machine, and springs are added to assist. The head is of sturdy construction, and is mounted on the company's regular high-speed ball bearing machine, with automatic cam feed and return. Indexing the jig and replacing the drilled parts is practically the only attention necessary on the part of the operator.

Of the titanium alloys, only four are in commercial use: Ferrocobalt-titanium, ferrotitanium, cuprotitanium and manganotitanium. Ferrocobalt-titanium and carbon-free ferrotitanium are employed as deoxidizers and denitrogenizers in steel practice. Cuprotitanium and manganotitanium are used as deoxidizers in brass and bronze practice. Information regarding these four alloys is contained in Serial 2406, "Titanium," by R. J. Anderson, metallurgist, which may be obtained by addressing the Bureau of Mines, Washington, D. C.

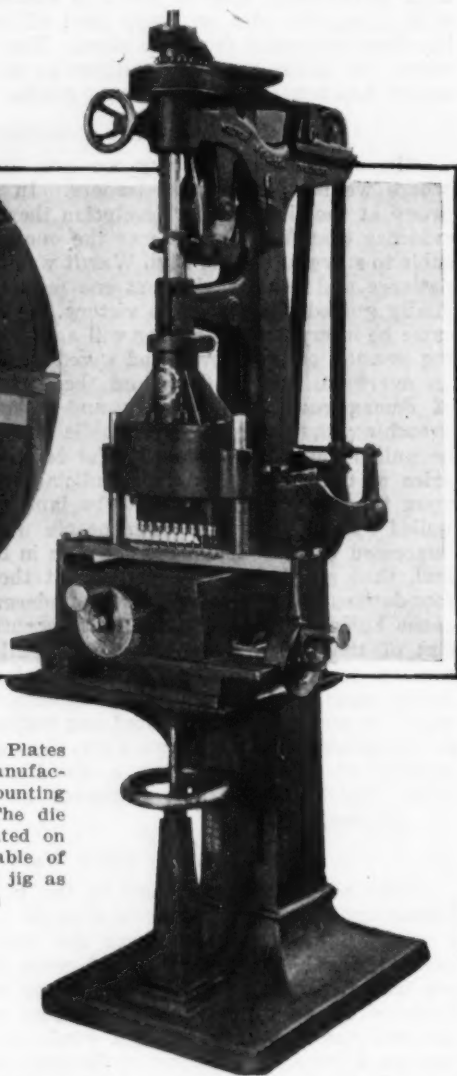
### Production on 1920 Levels

In its survey of October business conditions, the Department of Commerce points to the large increase in production of basic commodities. The output of pig iron and steel ingots, the consumption of cotton and silk and the output of cement, all exceeded in October any previous month since 1920. Cotton consumption at 533,950 bales was the highest for any month since June, 1920. Exports of raw cotton, 798,664 bales, have been exceeded only once since January, 1920. Silk consumption at 42,621 bales makes a new high record.

Floor area contracted for in new buildings showed an increase over September, instead of the usual decline. Both industrial and residential buildings shared in this increase. This may be due in part to the heavy fire



Drilling Die Plates Used in Manufacture of Accounting Machines. The die plate is located on the upper table of the indexing jig as shown



losses of both September and October, which were far above normal; being more than \$40,000,000 each month. Cement production at 12,287,000 bbl. formed a new high record.

Production of steel sheets advanced from 80.4 per cent of capacity to 91.8 per cent, both being far above the 53.8 per cent of October, 1921. Shipments of locomotives increased heavily, going from 119 to 145. Six locomotives in September and twelve in October were for foreign account. Freight cars advanced from 10,350 to 12,700.

Work of modernizing and rehabilitating the Thomas sheet mill plant at Niles of the Brier Hill Steel Co., Youngstown, will commence at an early date. Some of the equipment has already been ordered. The company's engineering department is working on the changes to be made to the 132-in. plate mill, so as to permit it to roll a wider range of gages. The changes will largely affect the rolls and housings. It is estimated this work will involve an outlay of approximately \$200,000.



# A Call for Better Chilled Cast Iron Wheels

## The Problem Presented by Failures in Service Is Not in the Difficulty of Making Wheels, But in Existing Replacement Practice

BY P. H. GRIFFIN\*

**C**ONDITIONS that have existed for a number of years in the manufacture and use of chilled car wheels have prevented the production of wheels equal to increasing service demands of heavier freight equipment and have led to deterioration during the period in which the wheel load and strain have continually increased.

There are about 25,000,000 car wheels in service and over 90 per cent are chilled wheels, the use of which is general in freight car service.

The result of the conditions referred to is shown by a report submitted by the test engineer of a leading railroad at a recent annual meeting of the American Society for Testing Materials as referred to in an editorial in *THE IRON AGE* of June 30, 1921. Details of the discussion at this meeting were given also in the same issue. The editorial comment was as follows:

The vital rôle played by the cast-iron wheel in the country's commerce and the need for chemical and other specifications to insure better wheels were emphasized anew at the annual meeting of the testing engineers at Asbury Park last week. In six years losses on railroads from accidents have increased over 200 per cent, or from \$33,000,000 in 1913 to \$106,000,000 in 1919, due in large measure to poor cast-iron car wheels. . . . The matter was brought to a focus at the annual convention and was easily the most vital subject of the steel and iron sessions. . . .

In the discussion of the report as published in the same issue the author stated that 42 wrecks on the lines of his company in 1920 were caused by broken wheels, all but a few being wheels under foreign cars (cars of other lines passing in interchange traffic).

The loss due to such accidents falls entirely on the line on which they happen, although it had no voice in the selection of the wheels that failed.

Accidents of a certain class are more or less inevitable because they are due to causes that cannot always be controlled, but accidents due to broken wheels are not of this kind. On certain lines operating large mileage under conditions hereafter stated there has been absolute freedom from accidents due to broken wheels.

### Not a Manufacturing Problem

The problem of better chilled wheels does not lie in the difficulty of making them, but in the conditions established by the practice carried on in this country under which such wheels are made and used. It is not a case of neglect on the part of practical railroad officials and wheel makers, but of a situation that so far has been beyond their control because no individual road or wheel maker has the power to make the necessary change.

The greater part of all freight traffic is carried in cars that pass from line to line from originating point to destination. Wheel renewals are made by the line, a car happens to be on when replacement is necessary and are governed by certain rules known as Master Car Builders' rules which fix the price of the new wheel and the value that must be deducted for the worn out wheel removed. The net charge so fixed for a standard 33-in. chilled wheel weighing 750 lb. is about \$7.50.

As the old wheel is so taken in part payment for the new one used, it is likewise used in payment to wheel makers for new wheels ordered. Wheel makers must recast the old wheels into new ones, and published reports of wheel making practice indicate the use of about 80 per cent of old wheels in making new ones. Sulphur and other impurities (the former from coke used in remelting) increase with each recasting.

The whole situation is the result of practice estab-

lished years ago that has been continued because of the difficulty of changing it.

In recent years the load and strain on car wheels in freight service has practically doubled through general use of cars of 50 tons or greater capacity, and such increase is sure to continue.

### Quality of Chilled Wheels

The chilled wheel has been made and can be made of quality that will fully meet these conditions, but under present practice it is evident that it has not been. This has caused the general impression that it has reached the limit of endurance and quality, but nothing can be further from the fact, as shown by many published records of service of wheels properly made of proper material.

It is not only a matter of the quality of the wheels themselves but of the mechanical conditions under which they are used. They are delivered by the maker and put in service by the user with no mechanical preparation except to bore hubs for axles. That is, the wheels are used in the rough as they are received, although more or less out of round, out of balance and uniform diameter. In this condition they must carry a maximum load that under heavy freight cars amounts to about 10 tons per wheel or 20 tons per axle.

It is not necessary to comment on the service results that follow. The loss of power required is evident, as well as the effect of the resulting shatter and strain on equipment, roadway and structures.

The whole situation and its results constitute one of the most vital and important problems of railroad operation in this country. The subject has been more or less discussed for years by associations of wheel makers and railroad officials in charge of practical operation, but the discussions have related to minor details and not to the fundamental conditions stated. Specifications and tests have been used as formulated by railroad associations, but they cover one or two wheels out of each hundred and wheels not accepted go into other use.

These conditions are not stated critically but to make clear the cause of the deterioration in chilled wheels and the means and method that must be adopted to stop it. It is simply a case of a situation that has gone beyond the bounds of present practice and that calls for improvement that will meet present conditions.

### What Should Be Done

The things that can be done to bring improvement may be briefly stated as to the most important ones:

The return of wheels removed from service to wheel makers, with no selection of those that failed to give proper results, can be discontinued and wheels that are plainly of poor quality can be used for other purposes. They will make excellent brake shoes and in that service will pass out of existence. There are other uses as well and no loss to speak of will result to the railroads.

All wheels should be properly finished mechanically before use. There is no difficulty about doing the work with apparatus long available and the cost is low. Some years ago it was done extensively.

These two points can only be solved by the railroads.

The quality of every wheel made can be thoroughly established by the maker in the process of manufacture by simple tests at the various stages. Under the present price restriction, established by M. C. B. price limits, this has not been done. Such practice has been published in all details as well as the fact that hundreds of thousands of wheels so made have been used in the heaviest service with no breakage.

But the makers must receive a price that will provide

\*President Griffin Chilled Steel & Iron Co.

for such manufacturing practice and heretofore they have not had it. The increase over the present M. C. B. price will not be great and it is entirely practicable to decide that point by proper investigation.

But in the past when such matters have been discussed the wheel makers have found that more expensive practice was called for when explained, with no increase in the M. C. B. price to cover the cost, and that has made present producers slow to accept the higher costs.

The general situation that confronts practical railroad officials has been equally difficult. They do not determine the prices to be paid for materials and at most can only submit specifications for what is required. The fact as to car wheels for freight service that has had most to do with present price conditions is that by far the greatest use of wheels is for renewals under foreign cars that are merely passing over the lines in transit. The M. C. B. price limits the charge

that can be made, as stated, and it is not necessary to point out that \$7.50 plus a like weight of scrap wheels does not admit of production of 33-in. standard wheels that weigh 750 lb. without the use of the scrap wheels, regardless of quality.

There is nothing complicated about the creation of better conditions except the securing of action to that end. If a few leading lines started action, others would be sure to follow and there is one reason why it must be taken sooner or later.

The total production of chilled wheels, covering over 90 per cent of all wheels used, does not exceed 5,000,000 per year. At the M. C. B. price the total cost is \$37,500,000.

If the total cost of all accidents in 1919 was \$106,000,000, with chilled wheel failures a leading item, it is evident that the annual cost of such failures must approach the total cost of all such wheels used both for new car construction and for all renewals.

## PECULIARITIES OF BUYERS

### Self-Sufficiency of the Egoist and Futility of the Rubber Stamp Type

BY JOHN J. RALPH

AS the human element can never be neglected, it is always necessary to make allowance for individual peculiarities when studying a selling situation. The times of stress showed these up beautifully. Every type of man re-acted to them in a different way, but there were a few types which stood out clearly.

The quality of enthusiasm and loyalty was present in practically all men. This quality is ordinarily rated high and sought for. The stress showed that practically all men have unlimited reserves which have not been tapped.

#### The Egoist

He is the man who, because he is he, is confident of the impossibility of his making error in judgment or calculation. Time after time this may be disproved, but there is the stock reply: "You cannot make omelettes without cracking eggs."

Having gone through a problem, there was no other solution possible than his, for HE had worked it out. There was no possibility of error having been made, particularly within the sphere of his technical knowledge, and opposition could have but one meaning—personal animus. For that there was but one cure—removal of the opposition; for only in that way could the path of progress be smoothed.

This is the man who gave verbal orders for machinery, who performed his calculations on scraps of paper and confidently assured us that detailed planning work was unnecessary, for he had already gone over the problem and it was solved.

#### With No Sense of Proportion

He spent the same amount of time on an order for \$25 worth of supplies as he did on the purchase of 100 machines at \$1,000 each, and demanded the same kind of formality for each requisition. He was as quick to give attention to the order for hinges for the alley door as he was to the requisition for a broken gear for the broken-down machine.

He was the man who was as insistent on immediate delivery of material, when he already had four months' supply on hand, as he was for the material that had to come by motor truck because operations could not proceed without it.

With a factory full of idle machines he was as insistent on the delivery of the final shipment in accordance with contract, when some other plant could use them immediately, as he was in pressing for the machine someone had forgotten to order, that should have been installed a month before.

#### A Lack of Sense of Value

This is the man who can see the value in anything up to, say, \$1,000 and insists on the most meticulous care

in investigating such a proposition. When the amount soars into the upper thousands, however, he cannot realize that here also he is talking of money and that each dollar is entitled to as much consideration as when the purchase is for \$25 only.

Such is the man who views the murder of one man with horror, but reads of the deaths of thousands in battle with equanimity. It is a peculiar phenomenon. Most of us know the executive who can be approached with fear and trembling when a few small tools are needed, but who listens readily to the proposal to install a machine costing thousands upon thousands of dollars.

We also have with us the man of wealth who, on the same day, buys a motor car at \$7,000 and begrudges himself a decent pocket knife at \$1.50. There seems to be a total inability to grasp the mental concept of many dollars consisting of a series of single dollars. One of the tests of mental development is the number to which the individual can count. Perhaps this is simply another phase of the phenomenon of lack of a sense of proportion.

There must also be counted in the delusion of grandeur. The feeling that one has just signed a contract for a quarter of a million can never be usual to the ordinary man. The transaction has a glamor that often prevents the close intimate study the smaller transactions get.

#### The Rubber Stamp

Feeling the urgent necessity of the purchasing, knowing that he is employed more as a matter of form than for his purchasing ability, the quite different rubber stamp type of man permits laxities in system which leave him entirely up in the air. He is continually receiving bills of lading for material he never knew had been ordered. He is continually called on to expedite goods he was assured had been ordered and delivery promised.

He has not even self respect enough to throw up his job when his province is cut into by every "Tom, Dick and Harry" in the organization. To be sure, responsibility is not his, for he and the organization can but reproduce the lack of ability and knowledge of those in authority.

## Automobile Production Still Heavy

Figures of the Department of Commerce show a production in October of 217,098 passenger cars and 21,416 trucks, a total of 238,514. This exceeds September by about 15 per cent under each heading, due in part to the closing of the Ford plants in September. The figures compare with 134,734 cars and 12,813 trucks in October, 1921.

For the first ten months of the year, production of passenger cars has reached 1,914,000 while trucks have exceeded 200,000. October is the seventh successive month with a total production of more than 200,000 vehicles.



# Easier Conditions on the Railroads

## Open Top Cars Released for Coke Shipments—Loading of Revenue Freight the Heaviest in History of American Railroads

WASHINGTON, Nov. 28.—Easier transportation conditions are reflected by recent developments. Following the order of the Interstate Commerce Commission of week before last, releasing open top equipment on all lines south of Ohio and Potomac Rivers, except the Baltimore & Ohio, to all classes of shippers, regardless of the height of the car, the commission last Thursday announced an amendment to car service order No. 25, effective last Saturday midnight, releasing open top equipment with sides 48 in. or less for shipments of all character of coke. The office of the Federal Fuel Distributor will be closed on Jan. 1. Federal Fuel Distributor Spens had prepared to relinquish his duties on Dec. 1, but will continue until New Year's at the request of President Harding. The president, while realizing that danger of a famine in the bituminous coal situation has passed, desires that every precaution be taken against any serious shortage arising through too miscellaneous distribution and it is also understood that he feels the anthracite situation still requires careful supervision. The lake shipping season is virtually at an end, which means that coal shipments which heretofore have been going to the Northwest, can now be diverted to industrial and other consumers in greater quantities in other sections of the country. In addition to these indications of improved transportation conditions, coal production is at a high point and there is a growing supply of cars and locomotives due to those that have been repaired and put into service and the delivery of new cars and locomotives.

### Feeling of Relief

While it is recognized that cold weather, with its hampering influence on transportation, is at hand, there is a feeling of general relief over developments. The order of the commission releasing open top equipment up to 48 in. for the coke trade, will release several thousand cars and allow blast furnaces to build up reserves. Heretofore shipments of coke for industrial purposes have been confined to regular coke racks and any cars that might be provided that did not have sides exceeding 42 in. in height.

### Other Regulations Removed

Another evidence that the coal situation is easier was the action of the Federal Fuel Distributor last Friday in revoking regulations, effective Dec. 1, requiring bituminous coal operators to furnish the Federal Fuel Distributor with daily statements as to coal loadings, prices obtained for coal and destinations to which coal is shipped. These regulations were promulgated on Sept. 27 and 28 and Oct. 4, and required that daily reports of coal shipments in the territory east of the Mississippi River be transmitted to the 15 naval officers acting as district representatives of the Federal Fuel Distributor. Operators in trans-Mississippi territory were required to make their reports directly to the Federal Fuel Distributor except in the case of operators in Iowa, Montana and North Dakota.

### Rolling Stock Installed

Reports received by the car service division of the American Railway Association show that new railroad owned equipment installed and on order by the railroads, up to Nov. 1, 1922, made an increase of 47,802 cars over 1921. Locomotives installed from Jan. 1 to Nov. 1, 1922, totaled 866; those on order Nov. 1 amounted to 1232. This represented a total of 2098 installed and on order as against 1382 installed in 1921.

Freight cars installed from Jan. 1 to Nov. 1, 1922, totaled 54,774, the principal type of equipment being

box cars, 19,352 and coal cars, 26,812. Cars on order Nov. 1 totaled 62,464, of which 30,844 were box cars and 22,571 were coal cars. The total installed and on order therefore, up to Nov. 1, was 117,238, as compared with 48,737, installed in 1921, during which year the total cars ordered and installed was 69,436.

### Rapid Repairing

The railroads repaired and turned out of their shops during the period from Oct. 15 to Nov. 1, 1922, the largest number of locomotives for any semi-monthly period in approximately the last two years. During that semi-monthly period 13,490 locomotives were repaired. This also exceeded by 2086 the number turned out of the shops from Oct. 1 to Oct. 15 last. Locomotives in need of repair on Nov. 1 totaled 18,366, or 28.5 per cent of the number on line. This was a decrease of 865 since Oct. 15, at which time 19,231, or 29.8 per cent were in need of repairs. Of the total number on Nov. 1, last, 15,101 were in need of repairs requiring more than 24 hours. This was a decrease since Oct. 15 of 834 locomotives in the number needing heavy repairs. The remaining 3265 represented locomotives in need of light repairs, which was a decrease of 31 within the same period. Reports filed by the carriers show that on Nov. 1 the railroads had 46,096 serviceable locomotives, an increase of 909 over the number on Oct. 15.

On Nov. 15 the shortage of cars totaled 153,236 as compared with 174,498 on Nov. 8. The shortage of box cars was 82,523, of coal cars, 42,827 and of coke cars 270. The surplus on Nov. 15 was 4945 cars, of which 669 were box and 2086 were coal cars.

### Heavy Loading

The car service division, in its report last Thursday, said that loading of revenue freight continues to be the heaviest in the history of American railroads.

For the week which ended on Nov. 11 loading totaled 953,909 cars, which is an increase of 198,132 cars compared with the corresponding week last year, and an increase of 26,323 cars compared with the corresponding week in 1920. The total, however, was a decrease of 40,918 cars compared with the preceding week due to election day and the observance of armistice day throughout the country, both of which took place during the week of Nov. 11. Coal loading totaled 188,312 cars. While this was a decrease of 5765 cars below the week before, it was an increase of 33,462 cars above the same week last year, but a decrease of 34,562 under the same week in 1920. Coke loading totaled 12,273 cars, 632 above the week before. Compared with the same week last year, this was an increase of 5896 cars, but a decrease of 2837 cars compared with the same week two years ago. Ore loading totaled 39,383 cars, which was a decrease of 7663 cars below the week before. Compared with the same week last year, however, this was an increase of 30,648, but a decrease of 10,300 under 1920.

Shipments by the Greenfield Tap & Die Corporation, Greenfield, Mass. during October were 66 per cent greater than those for the same month last year, while the comparative gain for the first ten months of the year was 24 per cent.

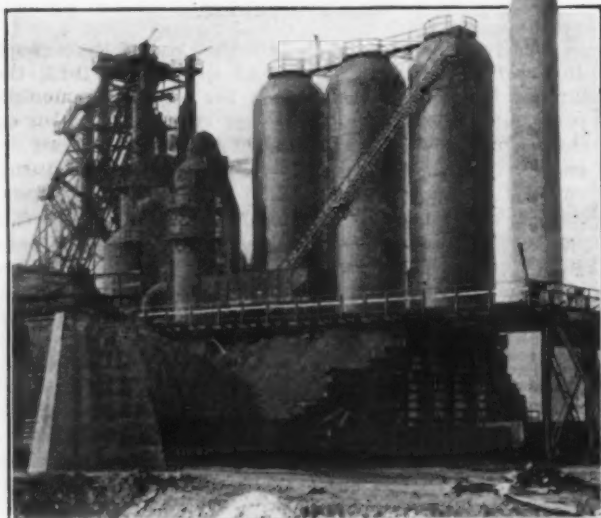
The labor barometer of the Employers' Association of Detroit shows a net increase of 3045 men for the week ending Nov. 14. The total working force of the 79 firms reporting is now 178,778.

## NEW CLAIRE FURNACE

Example of Modern Standard Blast Furnace Practice, But Unusual Methods of Disposing of Slag

BY GEORGE F. TEGAN\*

**A**NOTHER hand-filled blast furnace has passed. The Claire furnace, Sharpsville, Pa., owned by Reliance Coke & Fur-



The New Furnace Is Served by Three Stoves

nace Co., Pittsburgh, built in 1888, is no more. In its stead stands a new furnace, modern in every respect, which was blown in Nov. 23. It has a rated capacity of 500 tons of iron daily and it will produce this tonnage at no greater labor cost than the old stack, which turned out half that quantity. The new furnace is the successor of one of the first pig-iron making units built in the Shenango Valley, an iron furnace, known as Mt. Hickory, constructed a few years after the conclusion of the Civil War by Scott & Pierce. Later a second furnace of the same type was built and both were operated until 1887, when they were torn down to make room for the first Claire furnace.

It is interesting to compare these furnaces with the later ones. They were 45 ft. high with a hearth 6 ft. in diameter and a bosh of 10 ft. in diameter. They were open-top stacks, hand-filled and served by an elevator which moved up and down by water balance. Only hard Lake Superior ores were available in those days; the blast was 2½ lb. to 5 lb. pressure and pyrometers not then being known, the temperature of the iron was largely guess work. The common method was to hold a piece of lead pipe against a tuyere cap and count until the pipe melted, the heat being gaged by the count. These furnaces each produced about 175 tons of pig iron a week.

The first Claire furnace was a long step forward in blast furnace construction by comparison with the Mt. Hickory stacks and was able in a day and a half to make as much pig iron as the two old stacks cast in a week. It had a stack 75 ft. high and a diameter at the hearth of 11 ft. and at the bosh of 15 ft. 6 in. Four stoves arranged in a square furnished the hot blast. A hand-filled furnace, and possible to run profitably in recent years only during periods of high prices, it was only natural that it should in time give place to one capable of economical operation. The cost of making iron in the new furnace may run high, but this will be due to the prices of raw materials rather than to furnace performance.

The latest Claire furnace is a thoroughly modern unit and yet in its construction there has been no

important deviation from what to-day is regarded as "standard practice" in blast furnace building. In other words, the company has put up a furnace which, while embodying most of the modern contrivances, appliances and designs, does not contain any innovations. No claim is made that the furnace differs essentially from those which have been built in the past few years.

The stack is 87 ft. high with a diameter at the hearth of 16 ft. 3 in., and at the bosh of 20 ft. The bosh is built at an angle of 80 deg., the idea of this steep pitch being that the yield of iron will be increased by the fact that the metal will drop faster and with less resistance than with walls pitched at a slighter degree. In the old furnace the bosh was pitched at 75 deg. The stoves, three in number, are 100 ft. high, 22 ft. in diameter, of the two-pass side combustion type, built in a row. The chimney for carrying off the stove gases is of concrete, lined to its full height with radial fire brick. The chimney rears 200 ft. from the foundation level and is 7 ft. inside diameter at the top. Checker work in the stoves is 4½ in. square with 3-in. walls. The old stoves had large checkers with brick of varying sizes, the four stoves containing less heating surface than one of the new ones.

The furnace is served by a double-track cantilever skip bridge, the feature of which is that its weight is upon its own foundations rather than upon the stack. Wood bins for coke, ore and stone have been replaced by steel ones. Coke breeze is carried by a steam jet ash conveyor from a hopper under the screens to a bin located above the railroad track. The same track serves the dust catcher. Flue dust is stored and will be sintered later.

The furnace has a Brassert gas washer in connection with which is a gas drier. There are four uptakes, from which branch the downcomers, the latter converging into a single one going into the dust catcher. The furnace has the regular double-bell top, operated by the skip operator who also operates the coke bin gates. The stack is of heavy construction, the shell being of 1-in. steel plate.

To take care of the greater power demands of the new furnace, the company has installed two new boilers of 500 hp. each and 150-kw. motor generator set. The storage yard contains space for 100,000 tons of ore. This yard and the bins are served by a 3-track steel trustle, two tracks running over the bins and the



The Bins Are of Heavy Steel Construction. The view is of the ore bins

\*THE IRON AGE, Pittsburgh.





The Stack Has a Hearth Diameter of 16 ft. 3 in. and a Bosh Angle of 80 Deg.

other over the storage yard. The company now employs locomotive cranes for loading the bins from the storage pile, but for this purpose other arrangements will be made in the future. The new furnace having been built where the old stack stood, it has not been necessary to construct a new cast house. The old one, equipped with a single-strand casting machine, will be used.

Disposal of the slag is one activity in which the company departed from the beaten paths. The slag is granulated in the usual fashion of playing a stream of water upon it as it leaves the runners going into the pit.

It then is received into a hopper on the suction pipes of low-speed centrifugal pumps, and conveyed as a sludge under the Shenango River in 8-in. pipe lines to a storage space back of a hill opposite the plant property, a distance of 1500 ft. This means of slag

disposal will be watched with much interest because the more common practice of other furnace operators in the district is to "waste" the slag or to give it to the slag-crushing plants. There is considerable expense to the method employed by the Reliance Coke & Furnace Co., but it is not as costly as the charge of 69c. a ton now imposed by the railroads for "wasting" the slag.

The company has built a new pump house of concrete, equipped with two 6,000,000-gal. steam turbine-driven centrifugal pumps. The water passes through three screens, bar, mesh and perforated plate, before being used. The building contains a water chamber 5 ft. below the normal level of the river for the suction pipes, partitioned off, so that one section can be cleaned while the other is in use. Freyn, Brassert & Co., Chicago, handled the engineering details of the new construction.

### Farm Implement Outlook Improved

That advances in the prices of farm products may close up much of the gap between what the farmer gets for what he sells and what he pays for what he buys was pointed out in addresses at the meeting of the Tractor and Thresher Department of the National Association of Farm Equipment Manufacturers held in Chicago Nov. 16 and 17.

"The year which is just closing will write some more red ink history into many of our balance sheets," said F. R. Todd, vice-president, Deere & Co., Moline, Ill., in an address on the Outlook for the Farm Equipment Industry. "The year 1923 seems to hold better things in prospect. A month ago I felt that while 1923 would be a much more favorable year than either of the two that have gone before, it was not likely to be a profitable one. The developments of the last 30 days, particularly in the increasing prices of farm products, have to my mind improved the outlook, and I think there are now possibilities that the year 1923 may cover the turning point when red ink figures in our balance sheets will give place to black. I am quite sure that this will be the case if farm products will advance so as to cover any increase in implement prices that may be made necessary by our growing costs.

"The figures of Sept. 1, indicated that the prices of farm products were approximately 31 per cent above the pre-war level. Price advances during the month of September carried this level to 33 per cent above 1914. While the figures are not yet available for October, farm products generally went steadily up during that month, and it is probable that the present level is from 34 to 35 per cent above pre-war. If all of the farmers' purchases in the farm equipment line were taken into consideration at the present level of prices, the result

would probably show a little, if any, in excess of 35 per cent above pre-war. This means that in terms of implements the farmer's purchasing power has been substantially re-established."

### Will Sell Gun Plant

WASHINGTON, Nov. 28.—The office of the Director of Sales, War Department, announces that the Symington gun plant, Seventy-fourth Street and Ashland Avenue, Chicago, will be auctioned on the premises at 2:30 p. m., Dec. 2. The plant covers 47.4 acres and has a forge shop, cooling room, machine shop, a power building and two other steel structures. The equipment among other things includes seven 10-ton Chesapeake cranes; four 25-ton Chesapeake cranes; four 10-ton Shepard cranes; three 20-ton Milwaukee cranes; and one five-ton Shepard crane.

The working force at the Government armory at Springfield, Mass., has been reduced to 290, and presumably will remain on that basis until June 30, next, at least. The pre-war peace-time was about 600. The metal working departments have been transferred from the Hill to the Watershops plant, leaving the wood-working, heat treating, case hardening, cleaning, repairing and assembling departments at the Hill shops.

The relining of a hot blast stove of the Norton Iron Works at Ashland, Ky., and the installation of a pig casting machine at the Belfont Iron Works Co., Iron-ton, Ohio, are among added blast furnace plant construction work, both of these improvements to be done by Freyn, Brassert & Co., Chicago.

### Bag Holder Saves Labor

Many manufacturers of fittings, sprinkler heads and other small metal products, ship in bags rather than boxes. In counting parts, as they are thrown into the bags, one laborer handles the parts and counts them, and generally it has been found necessary for another laborer to hold the bag open to receive them, even when weighing is depended on for getting a count.



The Stand Holds the Bag Open While Being Filled

To save the time of one of these laborers on this work, the Malleable Iron Fittings Co., Branford, Conn., developed for its own use and has now put on the market a bag

holding stand. This consists essentially of two semi-circular castings of different sizes, connected by three standards. In each of the two castings are three renewable pins for holding the bag upright and open, so that material can be readily dropped into it. It will be noted that the device will accommodate different sizes of bags. Small bags are held with one end of the stand up and larger bags with the other end up.

The organization of a trade adviser service to act throughout the year as a medium for the interchange of experience on foreign trade problems is announced by the National Foreign Trade Council, India House, New York. "This service," says O. K. Davis, secretary of the council, "is intended to provide foreign traders with a confidential answer to those intimate, personal, or unusual problems which cannot be handled in a satisfactory manner through existing governmental or private agencies. It will be of very practical assistance to foreign traders in improving the technique of export organization, sales methods, foreign advertising, commercial credits, traffic management and other similar practical matters.

### National Foreign Trade Council Organizes Trade Adviser Service

"More than a hundred leading foreign trade executives from all parts of the United States, and many lines of industry have agreed to co-operate in this work, and to draw upon their own successful experience to help other foreign traders solve their problems.

"The trade adviser service of the foreign trade council will enable the manufacturer entering the export field to obtain invaluable advice from those of more mature experience. It will also provide the experienced manufacturer with an opportunity to check up his policies and methods with those of others equally or perhaps even more experienced in the same field. This advisory service is rendered without obligation to the inquirer and without remuneration to the adviser, solely with the bigger and broader point in view of assisting in the development of American foreign trade.

"To secure the benefits of this service, the inquirer should submit his problem in writing to the trade adviser secretary of the National Foreign Trade Council, 1 Hanover Square, New York, giving sufficient details and background to enable the advisers to visualize the problem in full. The inquiry will then be considered from all angles, and the reply will contain a digest of the advice of some of the best brains in American foreign trade."

The general chairman of the trade adviser service is E. P. Thomas, president United States Steel Products Co.

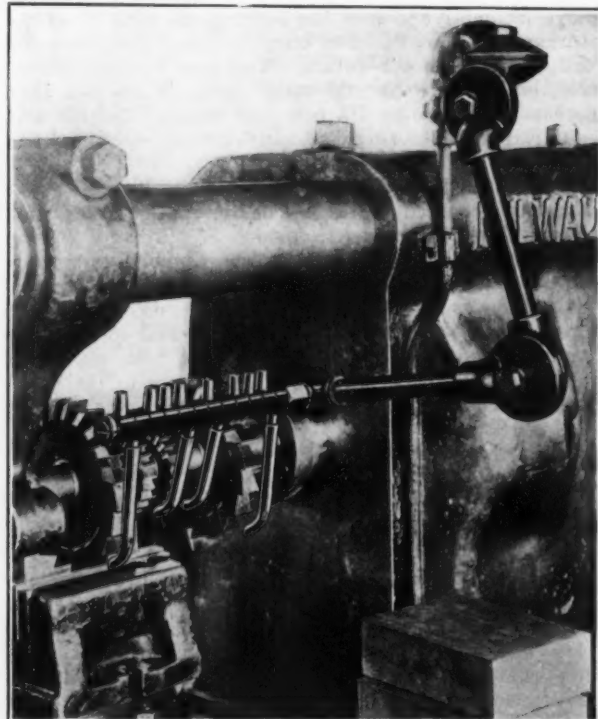
A. E. Ashburner, American Multigraph Sales Co., is vice-chairman, and C. J. Warren, Remington Typewriter Co., executive chairman.

### Multi-Production Lubricator Attachment

A multi-production lubricator for distributing tool and work cooling compound to tools and cutters on screw machines, milling and other machines has been placed on the market by the Borgeson Tool & Machine Co., Inc., Syracuse, N. Y. It is intended to permit of increasing production and reduced tool and cutter expense by providing adequate cooling lubrication.

The accompanying illustration shows the device as attached to a milling machine. It is made up of a threaded attachment plug and slotted distributing tube upon which the nozzles are mounted. The nozzles are held in a firm position on the distributing tube by spring tension, and each nozzle may be adjusted readily to the open or closed position without changing the others.

The distributing tube has elongated slots cut in the side, which register with the holes in the nozzles when in the open or feeding position. The length of the



Multi-Production Lubricator in Use on a Milling Machine. The nozzles are held in position on the distributing tube by spring tension

slots permits a wide range of adjustment in the open position. The attachment plug is threaded to standard pipe sizes, those for use on Jones & Lamson machines being threaded with the special thread required.

The spouts fit the taper on the distributing nozzle, and may be adjusted to any angle for directing the flow of cooling compound to the exact cutting edge of the tool. Various lengths of spouts, to suit requirements, are available. The swivel joints are made either single or double, permitting the distributors to be located readily in any position. They have large ground friction surfaces, and are said not to leak or jar from position when in use.

The West Penn Power Co. has ordered two 30,000 kw. turbine generators with surface condensers for its Springdale, Pa., plant from the Westinghouse Electric & Mfg. Co. The new units are 3-phase, 60-cycle, 12,000 volt, single cylinder, to operate with 300-lb. steam pressure at turbine, 250 deg. superheat, and 29-in. vacuum. Each generator will be served by a 55,000 sq. ft. condenser, equipped with two 35,000 g.p.m. circulators, driven by 300 hp. C. W. motors; two full capacity condensate pumps, a LeBlanc air pump and air ejectors.



# Problems of the Machine Tool Industry\*

Some Grow Out of the Relations of Dealers and Manufacturers  
—What Is Sold Is Production, Not Pounds of Cast  
Iron—Cost Does Not Make Value

BY ERNEST F. DU BRUL†

**A**N essential fact of economic society is that each producer must hunt his demand to make his living. The machine tool builder is no exception to this rule, and his success depends on the kind of sales outlets he has for his goods. No matter how good a machine he makes, it will not sell itself. He must bring it to the attention of prospective users. Advertising at best can only attract attention and perhaps arouse the interest of a prospective purchaser; but the sales of machine tools must be made in the end by personal contact.

Years ago most machine sales were made through dealers; but in the last few years some builders that were large enough to undertake the problem of direct selling have taken over the more concentrated territory for their own direct sales organization. Such changes do not come about as a result of mere caprice or notion, so it is well for both the manufacturer and the dealer to consider carefully the reasons for this change.

Machines are not built to be sold to dealers, and the economic process is not complete until they reach the users' hands. For the greater number of machine tool builders the dealer is still the point of contact with the real market, the users. Both being mutual participants, it is the duty of both the machine tool builder and the dealer to study the selling problems of the industry so as to perform their respective economic functions with the greatest efficiency.

## Co-operation of Dealer and Manufacturer

If a manufacturer does not give the dealer the co-operation that the circumstances fairly demand, the dealer will seek to represent a manufacturer who can and will give him the proper co-operation. If the dealer is responsible for some vital deficiency, the manufacturer, for his own self-preservation, must find another dealer or join with a group of manufacturers properly to reach the market that the dealer is neglecting, or start his own direct selling force. On the basis of those fundamentals it is well to have both elements, dealers and manufacturers, carefully consider their joint and several interests to bring out any defects of the present system and to take appropriate steps to remedy them. The Machine Tool Builders' Association at its last convention recommended to the board of directors that a committee be appointed to co-operate with a similar committee from the dealers' association in all matters of mutual interest. I am very glad to bring that message to this organization.

If there are any manufacturers or dealers who feel that the other's interests are antagonistic to them those men are short-sighted. Such men do not realize

that each one has a function to perform in seeking out machine tool demand. The manufacturer, of course, must produce machinery of quality, up-to-date in design, otherwise he cannot hope to compete with the more efficient machine. Efficiency of a machine means efficiency for the purpose for which it is to be devoted. In many cases a machine that will do rough work in rather slow time is efficient for its purpose, although in other cases the requirements are for a machine of very rapid and accurate productive capacity.

## Sales Problems Never So Important

In a spirit of analysis of the conditions governing the machine tool business, the recent convention of the Builders' Association had round table discussions that dealt with many things. The vital function of sales naturally received much attention. Never before have sales problems been so important, because as the aftermath of the war the machine tool industry is in a very deplorable state. The hard wallops of the worst depression ever known have started an amount of thinking that must lead to results. If the dealers are to do a proportionate amount of work along the line of their interest they too will use the brains the Lord gave them to work out some of these selling problems.

If men do not think clearly to work out safe and sane policies, their businesses will not produce the amount of income that they can have out of their efforts. Perhaps their businesses will go under the sheriff's red flag and they will lose their investment and some of their creditors' money besides.

Machine tool builders' ideas of the law of supply and demand have been entirely too vague and hazy. Most men have the general impression that the lower the price, the wider a market becomes in all cases. But this is not true in all cases and at all times. It is mostly true only as to goods that go to an ultimate consumer. Even in automobiles, although a reduction of \$50 or 16½ per cent might increase the Ford demand 25 per cent, a reduction of \$50 in the Rolls-Royce price would make no appreciable difference. Perhaps a reduction of 16½ per cent of the Rolls-Royce price would not increase the demand for the Rolls-Royce over 5 per cent.

## What Makes Machine Tool Demand

To jump to the conclusion that the law of supply and demand affects machine tools in the same way that it does the Ford automobile has been absolutely fatal to some machine tool companies. The machine tool has no demand of itself. Its demand is of the nature described as a secondary or derived demand. Its demand depends on the demand for the commodities which the machine tool produces. When that demand is satisfied there is absolutely no demand for machine tools at any price.

\*An address before the National Supply and Machinery Dealers' Association, Pittsburgh, Nov. 21, 1922.

†General manager National Machine Tool Builders' Association.

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**G**REATER specialization of machines and greater necessity of selling production efficiency forecast the coming of the sales engineer in the machine tool industry. The metal-working industry may be dangerously subject to abuses of credit, because men who start shops may be very good mechanics but very poor risks as business men. In innumerable cases very fine mechanics were so wanting in business capacity that they simply destroyed capital. It is not the business of either builders of machine tools or dealers to finance customers that bankers cannot afford to carry.

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You all know that a shop full of idle machinery with no prospect of using additional machinery is a very poor hunting ground for orders. No price short of a free gift would induce the owner of such a shop to clutter himself up with machine tools that he cannot use. Eventually the same condition comes to the automobile owner. He has a saturation point as an individual.

Demand for machine tools is of three kinds. One kind is due to wear-out and that is a very limited demand, indeed, because physically machine tools do not wear out very fast. The second demand is due to obsolescence, caused by the improvement of machine tool design and construction, whereby a given machine tool will produce more work with the same muscle power of attendance, the same space, supervision, and other overhead. The third class is expansion demand, due to the development of new industries or the expansion of old ones with the growth of the country. But whatever the motive that leads a buyer to invest in a machine tool, he does not invest unless and until he needs the tool.

It is very important for the machine tool industry and all its participants to realize that fact, because on that fact must be based a price policy that will produce a satisfactory return on the industry's investment of time, brains and capital. That return must be sufficient to keep the industry going or society will find itself without machine tools until the industry will yield a satisfactory return to its participants.

#### Cost Does Not Determine Value

Another economic principle that all participants in this industry must recognize is that cost does not produce value. The Socialist soap-box orator says that labor produces wealth; the manufacturer or merchant says that he marks up goods because they cost him more. But he hates to mark them down because they cost him less. Business men and salesmen say they ought to get more for their work because of the effort that they put out and the pain and anguish of putting it out. All say these things because they think that it is cost that produces value, whether that cost be a money cost or an effort cost.

As a matter of fact, cost has nothing whatever to do with the production of value. The maker or distributor of goods has nothing to say about value; it is the user of the goods who attaches value to the goods. It is the business of the fabricator or merchant to produce goods to which the buyer will attach a value in excess of the cost of production, and to get his cost as much below that valuation as he can.

It is also his business to know how high a value the user will put on the goods and how near to that value his competitor will allow him to make his asking price. Patent protection gives him a limited monopoly for a given length of time, and enables his price to equal the buyer's value, if he is salesman enough to get it. There are points below which he cannot go without losing his capital. There are other points below which he should not go, because his investment could be more productive in other lines. There are other points above which he cannot go, because to do so invites additional competition to come in and whittle down his return to a point that is not in conformity with the returns of other lines of business.

The machine tool builder has other limits to a high range of price. It is impossible for him to gouge the user, for two reasons: First, even though he has a tight patent monopoly he cannot get any buyer to pay more than a machine is worth as a profit-making asset. Second, if he has no patent and even though all competitors knew very accurately the maximum price that the user could afford to pay and still earn a profit, by the use of the machine, if that point is very much above the point that measures the cost and trouble of making the machine, the user could go ahead and make a machine for himself in his own shop. So to sell him, the price must be below this point of disutility.

#### The Working Price Range

Within such ranges of price the machine tool industry must work. It simply cannot go above and it

loses its investment through bankruptcy if it goes below.

That economic fact has a direct bearing on the selling problem. Every one of you has met the buyer who thinks he knows all about how little or how much a machine tool should cost and who sagely weighs his notion of cost against the price, and calls the machine tool builder a robber. But we notice that wiseacres who believe in that folly and try to run a machine tool shop on that basis do not stay in it very long. Most of the men using that argument do not believe their own bunk, but they are smart enough to make the machine tool crowd swallow it. As a matter of fact, the selling forces of the machine tool industry have not been good enough salesmen to refuse to be led astray on the question of cost of machine tools. On that account they have let themselves be jockeyed out of profits that the economics of the market would fairly and decently afford them.

Basing prices on cost does not work both ways as

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*THE dealer would do better not to deceive himself as to the actual worth of old machines and work to educate users to scrap them. In other cases the dealer has taken an old machine in at a very low price and then sold it at a price above its real worth. . . . If he does not work to improve methods of production through his activities, he is falling down on his job, and he need not be surprised if the manufacturer takes his job away from him.*

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a fair argument would, because the buyer feels no divine call to pay the machine tool builder more than the machine is worth because the machine cost a lot of money. If salesmen were trained to ridicule that argument as it should be ridiculed whenever it is brought up by a buyer, the buyer would soon recognize that he was making a fool of himself in trying it on. The fact that it has been taken seriously only shows how low is the level of salesmanship in the machine tool industry that allows such a false argument to gain currency and to be effective.

#### Cost Factors Overlooked

The machine tool buyer using that argument does not figure in his own estimate of cost a lot of factors that actually enter into cost. For that matter the machine tool builder himself has not figured those elements or the buyers could not so easily have gotten away with the argument. A shoe manufacturer does not figure the cost per pair of shoes based on the overhead of a given week during high production divided by the number of shoes produced that week and base his price accordingly. If he did he would find that the supposed profit gained during the active season would all be paid out and more besides to carry his organization over until the next active season.

The shoe salesman knows better than to let his customer argue and jockey about a price based on that nonsense. In principle the same thing must apply to the machine tool industry, except that instead of figuring overhead by the week or by seasonal periods of activity during a year, the machine tool builder and the dealer must figure on a cycle of longer duration. Machine tool cycles are as short as two years from bottom to bottom and have hardly ever been longer than four years from bottom to bottom. It seems that in some cycles the period of inactivity was as long as three years.

If the machine tool industry does not collect this cost of necessary idleness from its customers during the period of activity, both builders and dealers surely must go out through the bankruptcy court during the period of inactivity. Only those who get enough to



carry on are able to survive. Those who do not get enough sink, because they don't know their business.

Another element of machine tool cost is due to these long periods of inactivity. The industry is always faced with the necessity and the cost of re-building its labor force when its own demand comes on. This demand always comes on quite a while after the customers' shops are quite active, and the activity of the customers cleans up the labor market. When the machine tool builder can go into the labor market, he has to train new men or break up the organization of his customers by bidding his old men away from them at a greatly advanced wage that he must pay to overcome their preference to work in a steadier industry. This costs the machine tool industry a lot of money, and if that cost is not gotten back from the customers, our industry does not get a proper return on its capital.

#### A Paradox in Machinists' Wages

Another thing, the machine tool builder necessarily requires a more general and more skilled class of mechanics to build machine tools than is required to fabricate articles of mass production. The market price of automobiles is high enough to allow the automobile maker to pay high wages to unskilled labor to work on the specialized machines furnished him by the machine tool builder. Yet in many cases he pretends to expect the machine tool builder to sell his machines so low that this industry could not make the machines unless its skilled mechanics took lower wages than the automobile builder pays his unskilled laborers.

Some machine tools have been sold at a price so low that their high productivity saved enough in labor cost in four months to pay for the machine tool. In such cases the buyer was able to secure a 300 per cent a year investment, due to the selling incompetence of the supplier; yet the buyer "yammered" just as loudly about that machine tool being high priced as he did

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*THE market price of automobiles is high enough to allow the automobile maker to pay high wages to unskilled labor to work on the specialized machines furnished him by the machine tool builder. Yet in many cases he pretends to expect the machine tool builder to sell his machine so low that this industry could not make the machines unless its skilled mechanics took lower wages than the automobile builder pays his unskilled laborers.*

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about any other. In the particular case a price six times as much would have given the buyer a 50 per cent per year investment, and such investments are rather difficult to find except when made in machine tools.

#### Selling Production Not Pounds

We surely need to raise the level of the business capacity of executives who permit sales departments to set a price that will return 300 per cent a year profit to the purchaser of the machine. The whole industry must learn to sell *production* and not so many pounds of cast iron and steel. The manufacturers must learn to figure all the elements of cost so that ignorant competitors and buyers will not be deceived. All of us must make buyers consider productivity rather than weight in relation to price. Only when dickering for a price do they think of weight. Once they get the machine they don't care a hoot about weight. They don't really buy weight, they buy production.

Too many so-called salesmen alibi their incompetence with complaints about price. The industry will not gain the respect of its customers unless it asks prices that will be remunerative to both manufacturers and

dealers, and enable both of these to engage and hold men that are able to sell machines on their merits.

#### Has Salesmanship Suffered?

At our last convention, heart-to-heart discussion showed a widespread feeling that something is seriously wrong with the selling end of the industry, and the discussions brought out a number of points. During the war the great demand led some good salesmen to start machine tool agencies of their own. The war gave other employment to some other good salesmen. The vacancies were not filled by the same class of men, but by a class who were not practical men like the older salesmen were. In re-building their forces the dealers took the easiest way; they did not train a new set of men of the same caliber as those that had left them. The result was a deterioration in the quality of the salesmen. These inferior salesmen did not know the machines they were handling. If they ran into any trivial trouble they took the easiest way, which was to yell for factory help.

Cases reported by the factory men were of machines belted to run the wrong way, or a grinding machine spindle sticking because the user was ignorant enough to use heavy oil instead of a light oil. Another typical case was that of a machine that must have a 5-hp. motor. After it was installed it did not operate well. The salesman was told the machine was unsatisfactory and wired the manufacturer to send a man. When this man got to the job he discovered that a whole department was being run with a 5-hp. motor, and of course his machine slowed down. He then requested that a 5-hp. motor be supplied to operate his machine, which was installed after two or three weeks' delay. He was called for again because the user could not get a response from the machine. Further investigation showed that a 2-in. belt had been put to connect the motor to the countershaft, whereas the blue print sent specifically stated that a 5-in. belt was required. When the 5-in. belt was put on the machine worked without any difficulty.

That was a combination of inefficiency in both the user of the machine and the salesman, but it was the machine tool builder who paid the expense of straightening it out. Frequently factory men are called to straighten out people who fail to oil machines and take proper care of them. Frequently belts slip and machines fail to deliver the necessary power and salesmen have not sufficient judgment even to recommend the tightening of the belt.

#### What Dealer Service Should Be

Now the cure for this sort of trouble lies in the hands of the dealer. Certainly a salesman who knew what any salesman ought to know about the goods he sells would not have asked the factory to go to the expense of sending a man to find out such trivial conditions. It is the dealer who hires the salesmen he pays and he certainly should hire men that have sufficient elementary mechanical knowledge to look after such minor troubles on any machine. Unless the dealer does have such men he is not giving competent representation to the factory's product.

If the factory is to be always called on for help to sell the prospect, and to service him, the manufacturer will easily be led to decide that since his own force must do most of the real engineering service of selling, demonstrating, trouble-shooting, and so on, he might just as well carry the accounts himself and let his men dig up the prospects as well. Some large organizations have gone to selling direct, other concerns have combined into a group that jointly employs direct representatives for the group. These steps were taken because of dissatisfaction with the quality of representation in real selling.

To get at the worth of the service of merely carrying accounts, add to the counter rate for money the small amount necessary to safely take care of losses and you get a very fair measure of what that service is worth. Eliminate that from the commission and stare straight in the face the cost the well-established manufacturer would have of digging up prospects that come only through the dealers' efforts. Where the

**C***OST has nothing whatever to do with the production of value. The maker or distributor has nothing to say about value; it is the user who attaches value to the goods. It is the business of the fabricator or merchant to produce goods to which the buyer will attach a value in excess of the cost of production, and to get his cost as much below that valuation as he can.*

manufacturers' service men have to be out on the territory anyhow, they dig up many prospects right in the shop, that the order taker never could find.

Some other developments make it very necessary for both the dealer and manufacturer to weigh the real value of real sales engineering. Greater specialization of machines and greater necessity of selling production efficiency forecast the coming of the sales engineer in the machine tool industry. Selling a 50 per cent investment instead of a 300 per cent a year investment would give quite a handsome margin out of which to pay for the highest type of sales engineering service.

#### Putting Specialists on the Road

Again there is the question of a dealer handling many lines of machines. It is humanly impossible for a salesman to be sufficiently competent to do all the sales engineering required on all these lines. Is it real service to the user to give a mere order taker a certain territory, out of which to dig up prospects for all kinds of machines? In the end will it not produce better results all round by having men specialize on a few machines and cover the whole territory? That is the problem for the dealer to figure out. Some manufacturers have figured it out quite the opposite to the present practice. As a consequence they have put their own specialists on the road, either individually or as groups. Their success will lead other manufacturers to seriously consider the adoption of the same policy.

Naturally it is a task to gather and hold together a lot of high grade salesmen; the higher their grade the more ambitious they will be to go into business for themselves. To retain them one must give them a fair split not only in the way of salary and commissions, but allow them to become partners or stockholders. This is another problem that must be solved both by the manufacturer and the dealer, each for himself.

I am very sure that machine tool builders have neglected their own rights in the way of patents. The man best protected with patents can draw better men and maintain a better organization which will benefit more users.

#### Shaving Commissions

In addition to the salesman questions, there are other matters of administration policy that are controlled by the owners of the dealers' establishments. A dealer is in law not an employee of the manufacturer and legally is free, if he has bought a machine, to do what he wills with it, to make whatever price he wills, to make whatever terms he wills, to throw in whatever attachments he wills. On the other hand, economically the dealer is a channel through which the product is distributed from the manufacturer to the ultimate user. The manufacturer who sells through his own employees makes his price and lays down his own policy and the employee must abide by it.

In competition it is what the ultimate user eventually pays for a machine tool that must and will govern the manufacturer's policy. If the dealer gives up a part of his commission to get an order away from a competitor he need not be surprised if this is taken to show that his commission is too high. The same if the dealer gives unusual terms of credit, or throws

in a lot of attachments or accessories. He thereby proclaims that his margin is too great and invites a cut in commissions, or the establishment of direct selling outlets to meet the competitor at the point of delivery, the user.

Granting unwarranted terms, cutting commissions or throwing in attachments is often due to childish ignorance of the dealers' cost of doing business. But whatever their cause some very unpleasant results are sure to follow, due to human nature. The market effect is just the same in the way of demoralization and cut-throat competition, whether the abuse arises from a dealer or from a manufacturer's own employee.

#### The Factor of Good Will

The customer will not pay the same price for an XYZ hat as he will for a Dunlap hat, no matter if they are of exactly the same quality. He will pay a premium for the Dunlap hat over an unknown hat, merely as a personal insurance, because he is not an expert on hats. Therefore, the XYZ Co. must be content with a smaller price than the Dunlap Co. can get in the open market. The XYZ hat even at the lower price may require a bigger sales effort to sell it at a lower price than does the Dunlap.

Both dealers and manufacturers should recognize the strength of a good will factor and what it means in price. Suppose a Dunlap agent were to complain that Dunlap hats were too high priced because Truly Warner sold a \$3 hat. He would very likely be told that his job was to sell Dunlap hats, that Dunlap did not expect to sell all the hats in the world but only a good share of the high priced hats, and he should not try to persuade a \$3 customer to buy a Dunlap.

Another question that has come up is the matter of terms on machine tools. Looked at strictly from the best financial practice, if a buyer cannot secure the funds with which to pay for machine tools in 30 days it is not the business of the seller of machine tools, either direct seller or dealer, to finance his capital requirements. Why take a partnership interest to that extent, even for a counter rate of bank interest, and perhaps be satisfied with having no security for the account. That is bad business, fundamentally bad. Good business dictates that men finance their fixed asset requirements with their own capital or by funded debts which are amply secured, or take in partners to carry the risk and share in the profits.

#### Credit Abuses

It is not out of place here to say that the banking fraternity are beginning to question why there should have been so many failures among the manufacturers of metal products in the last few years. They have been greater than in any other class of manufacturers in number, liabilities and proportion. These men got more credit than they knew how to use, and when they failed they not only lost their own money, but some of their creditors' money as well. The man who gives more credit than a debtor is fairly entitled to and thereby leads him to destruction, does society just as much damage as though he had set fire to that debtor's plant and burnt up those values. Every man should have as much credit as he can safely and sanely use, but neither bankers nor merchandise creditors should extend credit that makes a man's business unsafe.

The metal working industry may be dangerously subject to abuses of credit because men who start shops may be very good as mechanics but very poor risks as business men. In innumerable cases, very fine mechanics were so wanting in business capacity that they simply destroyed capital. It is not the business of either builders or dealers in machine tools to finance customers that bankers cannot afford to carry. If one does it he starts a bad practice whose effects are sure to be felt all through the industry.

#### Physical and Economic Life of a Machine

It is too often lost sight of that the economic life of a machine may be quite different from its physical life. In the shops of this country are many machines that cost more to operate than a new machine would



cost. Some of them are in machine tool shops. They waste their owner's substance because salesmen have not known how to sell a better product of the newer type. Both manufacturers and dealers have over-emphasized the physical life of the machine and under-emphasized its economic life. Dealers have allowed, on old machines in trade, far more than their real value. Then they have worked hard to pass the lemon on to some other customer instead of sending it to the cupola.

There are places where an old machine is a perfectly logical thing to install, but old machines have often been sold where a new one or a better one could and should have been installed, just because the dealer allowed too much on the old one in a trade. The dealer would do better not to deceive himself as to the actual worth of old machines, and work to educate users to scrap them. In other cases the dealer has taken an old machine in at a very low price and then sold it at a price above its real worth. In such cases a dealer is not performing his economic function in an economic manner. If he does not work to improve methods of production through his activities, he is falling down on his job, and he need not be surprised if the manufacturer takes that job away from him.

Then there is the question of repairs on old machines. It is doubtful if machine tool builders get paid for the trouble and expense and direct cost of getting the repair to the customer. It takes the time of a high priced engineer to dig out old drawings, and get out the proper pattern. Getting a special casting, putting that repair through the shop at a single piece, stopping production on modern and profitable product; all cost more than machine tool builders figure they do. If they figured these costs against the job they would refuse to furnish many a repair that they have furnished. Here again the selling function of the dealer comes in. Instead of encouraging men to uneconomically repair obsolete machines they should analyze the user's situation and in many cases they would sell a new machine instead of bothering with a small repair.

#### Grinding Machine Problems

Each separate type of machine has a crop of troubles that are peculiarly its own. Letters from

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*THE machine tool has no demand of itself. Its demand depends on the demand for the commodities which the machine tool produces. When that is satisfied, there is absolutely no demand for machine tools at any price.*

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manufacturers of grinding machines cite specific grinding machine troubles. These manufacturers say things like this:

The grinding machine requires specialists to sell. Dealers' salesmen who have no direct knowledge and are not experts on grinding machines made it necessary for us to send our own experts into the field, who actually did the selling. This developed to such a point that we found we had a force in the field sufficient to carry on the selling program. The agents merely did clerical work, and collected the accounts, so that our next step was to do this work ourselves, which we did for very much less money, and got more sales for the money spent. We could not expect the agents to send every one of their salesmen to us to be made into grinding machine experts, and as long as we had to provide the expert service and the sales were made by the experts we took the next logical step and have never regretted it.

#### HELPLESSNESS OF SALESMEN

Another one writes:

In the matter of grinding machines the salesmen seem to be absolutely helpless. If any little thing is complained of by the purchasers they cannot get to the nearest telegraph office or telephone quick enough to notify the manufacturer

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*DURING the war the great demand led some good salesmen to start machine tool agencies of their own. The war gave other employment to some other good salesmen. The vacancies were not filled by the same class of men, but by a class who were not practical men, as the older salesmen were. The result was a deterioration in the quality of the salesmen.*

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that it is absolutely necessary to send a service man immediately. This means that even simple mechanical things that anybody dealing with any machine should be competent to look after are being neglected by the salesmen due to their incompetence. If the salesmen are to continue to be of this class, additional selling combinations of manufacturers may be looked for.

Another one suggests:

Instead of wasting traveling expense running around among customers during a few weeks in the hot season when there is no purchasing anyway, this money could be far more profitably spent by sending the salesmen to a few manufacturers each year. In a short time this would build up a strong practical selling organization. The manufacturers are only too glad to instruct salesmen in the selling points of their machines and to caution them with respect to the more frequent annoyances experienced after the machines get into the hands of the customer. This system would tend to keep up the salesmen's interest in their work. They would become more enthusiastic boosters for that manufacturer instead of always falling in with the viewpoint of the purchaser. This is not based on hearsay or imagination; 26 years of contact as a salesman with manufacturers, dealers, and customers, entitle the writer to speak with authority on that subject.

Another letter says:

While not all of our dealers have shown a disposition to call on us unduly, some of them have, and we think that the others have acquired a good working knowledge of our product because we have called to their attention any unnecessary trips that we have taken because of complaints that they transmitted to us.

#### ON GRINDING WHEELS

Another one writes:

Manufacturers of grinding machines send the machine out equipped with a cutting tool in the shape of an emery wheel. You never get cutters with a milling machine, nor cutting tools with a lathe or planer, you equip it yourself with the right tool for the kind of material and sort of cuts you will take on that machine. Yet a large percentage of the users of grinders try to get the same wheel to do all different kinds of work, whether on gray iron castings, carbon steel, or high speed steel. This is a matter that dealers and salesmen should fully appreciate and manufacturers should cease to send out grinding wheels with grinding machines.

Another remark is:

The grinding machine is a precision machine of the finest type and of relatively high spindle speed. When the machine is tested out on the factory floor the spindle bearings are adjusted when the bearing head of the machine is quite warm. I have seen the take-up on the bearings adjusted when cast iron housings were so hot that it was uncomfortable to lay the hand on it. To do a nice piece of work demanding extreme accuracy you cannot put your work on the table, throw over the belt, and start in on the work. You must run the head in until there is a uniformity of heat change in the bearings. Only after warming up will the machine do a nice piece of grinding. We send out our machines with the bearings tight but too often we find that the users of the machines, noticing a slight belt slippage, immediately loosen up the spindle and then get a lot of "chatter" for which they condemn the machine and call for a factory representative. These men have often had to go many miles merely to advise the operator of the machine to warm up his machine before running, or to use a lighter grade of oil in his spindle, or some little thing of that sort.

Another one says:

The dealers must endeavor to impress on their salesmen that they must become acquainted with the grinding machine, not be a stranger to it, and particularly not be afraid of it.

As it is now they call for factory representatives simply because there is a grinding machine giving a little trouble, rather than a lathe or drill that might give as much trouble as the grinder and be corrected with as little mechanical ability.

#### Mutual Interest of Makers and Dealers

In closing I desire to express the thanks of our organization for the opportunity here presented to lay before the dealers these problems of mutual interest. Some very incorrect impressions have been current to the effect that interests of machine tool builders and dealers are necessarily opposed one to the other. That is not only an incorrect impression but an unfortunate one, because both of these elements are part of the machine tool industry. Only by frank co-operation on

a plane of self-respect and the Golden Rule applicable not only as between dealers and dealers, and as between manufacturer and manufacturer, but as between dealer and manufacturer and customer as well, can the industry fully and profitably function as it should. Misrepresentation of motives of either dealer or manufacturer can do the industry nothing but harm. Questions affecting the industry as a whole should be considered in the light of intelligent appraisal rather than from a blind prejudice.

I have endeavored to set before you some facts, and to point out the effects of certain causes that have operated in the past to the detriment of the whole industry, in the hope of bettering the function of distribution in which you are engaged.

## The High-Cost Factor in the Scrap Trade

—Transportation and Labor Responsible for Large Increases—

Why the Consumer Must Pay So Much More To-day  
If He Draws from Distant Sources

BY W. VERNON PHILLIPS\*

IT is common to say that "Scrap is worth what it will bring"; also that "Scrap has no intrinsic value" and is entirely the creature of supply and demand. This is true to an extent, but the position has been changed considerably in the last few years.

It is still true that during a depression scrap is only "worth what it will bring" at its point of origin or "worth all that it will bring" during a period of activity; but the new element of high costs has affected the delivered cost of scrap in perhaps greater proportion than any other commodity. Roughly speaking, labor and freights have practically doubled.

A typical illustration will be the cost of delivering New England scrap to the Pittsburgh district, typical because the bulk of this scrap goes to that district, and because Pittsburgh is absolutely dependent on outside scrap; and with so many avenues cut off by other consumers this market is greatly influenced, if not made, by the cost of New England scrap.

In 1914 the average cost of loading and delivering scrap to New England yards was \$1.50 per ton; its preparation and conditioning in the yard, \$2.50 per ton; freight to Pittsburgh, \$3 per ton. Adding \$1.50 per ton profit for the yard, the dealer and broker interested in the movement gave a total of \$8.50. In 1922 these costs are: loading and delivery to the yard, \$2.50; conditioning, \$4; freight to Pittsburgh, \$5.53, and assuming the same profits the total is \$13.53. Assuming the producer or owner was willing to sell at \$5 per ton, this represents a cost of \$13.50 delivered in 1914 and of \$18.53 in 1922.

It is true that a large percentage of scrap is shipped directly to the consumer without passing through a yard, thus saving some of this cost; but excepting in a very dull market the price is established by the yard costs, and during times of depression the scrap in the yards must be stored until a profit can be secured. Thus scrap has an actual cost in the above instance of \$13.53, delivered, plus the price paid for the raw material, which is the only part dependent upon supply and demand.

The buyer of scrap has only two facts to go on. First, is the intrinsic value, which is its ratio of metallic production and cost of melting to pig iron; second, is the actual cost of preparation and delivery above illustrated.

A third element, supply, reduces everything to guesswork. There is no known means of ascertaining either the production or supply of scrap. Following a depression there is a good supply of steel scrap but a poor production of manufactured scrap. There is always an apparent shortage on a rising market and an

apparent over-supply on a declining market. This was very clearly illustrated to the writer during the war when we were only securing the scrap available from day to day. It had reached a point where we had decided to commandeer. On Nov. 10, 1918, there was no scrap available, while on Nov. 11 (Armistice Day) with a positive decline in prices in prospect, a month's supply, or 1,000,000 tons of scrap, was for sale. As a matter of fact there was not one pound more available than on the day before.

Theoretically the buyer should place himself in the center of a circle. At minimum prices he will get the scrap on his doorstep. As his needs increase, the circle will widen and extend until it reaches to a point where a surplus of scrap is encountered. But as the circle widens, the scrap within the circle which has not been sold or is being produced will benefit in price to the extent of the increased freights from the farthest point. Neither the dealer nor the broker is profiting by the high prices, two-thirds of the increase being garnered by the railroads and the remainder by labor.

Take the present market as an instance. A month ago no one could figure out how there would be sufficient steel scrap to satisfy the mills' needs. To-day the supply is apparently more than sufficient. As a matter of fact, the supply to-day is greatly reduced. The yards everywhere have been liquidating their storage piles; the large Government surplus materials have disappeared; the railroads, due to labor scarcity and car shortage, are collecting less and less scrap, whereas the mills are probably consuming more rather than less.

The two points to be emphasized are: First, that prepared delivered scrap to-day has a much higher cost than in pre-war days, due to labor and freights; second, that a declining market does not necessarily mean that a larger supply of scrap exists; it usually means the reverse.

The scrap dealer works on short turns of approximately thirty days, whereas the mill should work on the longer swings of at least three months, and should never subject itself to the danger of being caught in one of the shorter movements.

The above does not take into account at all the question of embargoes, car shortages, and other difficulties which are so serious to-day. As a result, a considerable tonnage of scrap has been sold but cannot be shipped. This will come into the mills later, but not on the market. In the meantime, the mills may have to reach out farther and farther to points from which they are not embargoed, to get their needs, thus widening the circle and increasing the price to the extent of the additional freights, which represent such a large part of the cost to-day.

\*Perry, Buxton, Doane Co., Philadelphia.



# Shaping Management to New Conditions

Predicted Long Term Buyers' Market—Requires Adjustment of Policies—Other Topics Discussed at Taylor Society Meeting

**T**HAT for a decade consumers' demand is likely to remain so hesitant and uncertain as to be out of proportion to our great capacity as a nation to produce, and that, in view of a buyers' market continuing for most of this period; management should have more concern over future policy were views expressed by Dr. H. S. Person, managing director of the Taylor Society in an address on "Shaping Your Management to Meet Industrial Conditions," given at the annual meeting of the society held in New York, Nov. 22, 23 and 24.

Sessions were devoted to a variety of subjects, including the organization and management of a medium-sized plant, the supervision of personnel, master budgets of sales and production, and some of the uses of statistical compilation as a function of scientific management. The addresses and papers were for the most part received enthusiastically, and a feature of the sessions was the time allowed for discussion and questions.

The background and argument of Dr. Person's address may be summarized as follows: Weak industrial enterprises have succumbed to the shock of the recent depression; others have just pulled through and are still in a precarious condition; others believe that, because they seem to have pulled through safely, there is a clear way ahead. It is the argument of the address that the way ahead is not likely to prove as clear as many believe, especially for those establishments which will continue to be managed in the conventional manner. Dr. Person outlined what the tendency is, what industrial conditions will probably result, and what kind of management will be required to meet them.

The particular phase of the policy problem considered is presented in the question: "How must executives shape their managements to meet developing industrial conditions?" The question was pointed out as not to be understood as asking what new principles of management must be discovered and formulated, it being added that we have principles enough at our command, many more than have been generally recognized and utilized, to meet any conceivable conditions.

## Developing Industrial Conditions Reviewed

In taking up developing industrial conditions, Dr. Person stated that a first glance is reassuring, "for the revival due to follow the acute depression of 1921 is obviously already under way. This is indicated in all the reports of fundamental lines of activity. We even already hear talk of a 1923 boom on the part of ultra-optimistic business men.

"But a second, less superficial consideration of conditions causes us to hesitate to join those who believe 'it is all over except the shouting.' May not the evidence of revival be only the evidence of a rebound from the extreme depression, and may not the present rate of acceleration be only temporary, to be replaced by a rate more moderate? May not the projection of a curve into the future on the assumption of a continuance of the present rate of revival be a dangerous basis on which to establish managerial policy for the future? The more thoughtful and cautious fear so.

"When there is eliminated the activity to supply seasonal and terminable demand, and particularly the intensive activity to supply the abnormal demand for fundamental necessities to which the exigencies of war denied satisfaction, for instance, construction and its allied industries, when there is observed the fact that consumers' demand for a wide range of commodities and services is continuing to be cautious, there is not left a sufficient amount of evidence to warrant a projection of the curve of industrial activity into the future at its present gratifying slope."

"During the past decade, as a result of the study of earlier cyclic movements, we have learned that certain economic phenomena, such as the quantity of money and credit, have a definite relation to industrial activity," said Dr. Person, in a third analysis which included more fundamental conditions. He pointed out that in general industrial activity increases in intensity with an upward price movement, is stagnant when there is a downward price movement, and is hesitant and uncertain in the early years of a new stable price level. "The ideal condition," he stated, "is a fairly stable price level, but when a condition of stable price level suddenly confronts an industrial generation accustomed to a consistent upward price movement over a long period, the new condition of stability, because different from the accustomed, is upsetting to the individual, either as demander or producer. It takes a considerable period, measured not in months but in years, for him to learn just what he can safely do, both in purchasing and in producing."

The work done in recent years in the analysis of fundamental industrial conditions and tendencies, which have given a basis for policy determination more substantial than anything previously available, was commented on. The success of these investigators in making some accurate measurements of basic elements which determine price conditions for a number of years was pointed out, and the safest judgment to accept was stated to be "that, in the words of the Harvard Committee on Economic Research, 'the present price level is substantially that around which the fluctuations of the business cycle must play' for the next ten years."

Assuming that forecast to be correct, the effect of a new price-level was said to be that we are for a number of years going to continue to be conservative as purchasers and also as producers. "As producers, he said, "we are going to wait for demand, and as demanders we are going to wait until we have adjusted our purchases to the new relation between our incomes and the cost of living. It is true that wages are settling to a new high level, but there still remains a large number of consumers whose incomes are not readjusted so easily and quickly, whose incomes are and will for some time continue to be adjusted rather to the old price level." That it does not take a very large bloc of maladjusted consumers to keep the market unsteady and uncertain was emphasized.

## Demand Will Be Less Than Productive Capacity

The conclusion to be drawn was pointed out to be that consumer demand is likely to remain so hesitant and uncertain as to be out of proportion to our capacity to produce. Calling attention to the great capacity of American industry, the question was put, "If our productive capacity is so great, and if it can be made greater simply by eliminating sheer idleness (waste), and if consumer demand is fairly certain to be hesitant for the coming decade, have you or have you not a really critical management problem confronting you?"

"We all appreciate," said Dr. Person, in a fourth analysis of present industrial tendencies, "that we are now in at least a temporary buyers' market. I am suggesting that we are on the trail to a dominant buyers' market and that we are possibly already on the great divide." He reviewed in brief the industrial history of the United States to show that we have been brought up in a sellers' market.

"Consumers' demand," he pointed out, "has kept ahead of and pulled along producers' capacity to satisfy the demand." The evolutionary tendency toward a buyers' market was outlined and in connection with the shock to the industrial system caused by the war it was stated that it "seems to have hastened evolutionary

tendencies, which would have developed more gradually and with only relatively minor depressions, and to have thrown us suddenly upon a buyers' market which will last for some time and may be the beginning of a dominant buyers' market."

#### Management on a Buyers' Market Different

In discussing what a buyers' market means, Dr. Person said in part: "It means, for competitive industries, a strife for the consumers' dollar which makes so-called competition on a sellers' market seem but a children's game. There never was a time," he emphasized, "when management should have more concern over future policy, and over the quality of its future management. Now that you appear to be face to face with a buyers' market and the necessity of developing real management, if you are to be successful in a most intense competition, if your competitor, instead of yourself, is to be the one to disappear in some readjustment of productive capacity to consumer demand, it is expedient for you to inquire into the nature of that real management."

Tremendous production capacity with a conservative, hesitant market continuing for a considerable period was given as the practical elements of the problem. This, it was said, will mean intense competition to find the individual consumers and to sell them, and in that competition selling price and cost of production will be critical factors. "The hesitant market will tend to force selling price down, while higher prices of certain elements entering into cost will tend to keep that figure up. Wages," he said, "have settled at a new high level, and the strength of organized labor and new immigration policy seem sufficient to hold them there during such a period as will determine the success or failure of competing enterprises. It should be observed also that many of the basic materials of industry are closely controlled, and that material costs are likely to remain high. Therefore, the management will be faced by high prime costs in the face of great pressure to reduce the selling price of fabricated products.

#### The Way Out

"The way out for the successful competitor," said Dr. Person, "seems to be to develop an inclusive system of management which will more than compensate for high prime costs by cost savings elsewhere, thereby effecting lower factory costs and making possible lower selling prices." In the first place that management will give more attention to long-run tendencies in the industrial environment. Major executives will give more thought to policy and general plans and not become too much absorbed in operating details, he said. They will have in their organizations a unit to study and interpret industrial statistics.

Secondly, management will provide for a more accurate judgment of the market with respect to the demand for the commodities it has to offer, competitors' ability to supply the demand and what share of the market it can have reasonable expectations of securing. Managers will learn that they cannot afford to misjudge demand, either with respect to what it wants, how much it wants or what share of it competitors will permit a particular enterprise to provide. Excessive inventories are fatal on a buyers' market, he said, but management will avoid it by means of some unit in the organization which will make continuous and precise analysis of the market and provide the data for master plans and schedules. Management will set up in writing, on basis of data from market research, definite master plans, budgets and schedules of operations for a considerable period ahead, these being supported by definite and interdependent detail plans and schedules for the major operating departments, selling, production and financing, respectively. These will be standards of performance, goals to strive for.

Selling operations will have to be conducted with more skill than ever before, and in connection with detail changes likely to follow the development of the new merchandising it was asked: "Is it not probable that there will be less of that advertising whose object is to create new wants in satisfaction of which consumers would spend surplus dollars, and more of that adver-

tising whose object is to convince concerning the quality of staple merchandise offered in competition for the limited supply of dollars?"

#### Good Production Methods Important

Turning to better production methods as a feature of the new management, Dr. Person said that the production problem is far from solved. "It is true," he said, "though we have a body of production management principles at our command which if utilized would eliminate waste, reduce costs and permit cost and price reductions to an astonishing extent. But it is equally true," he emphasized, "that they are not generally utilized, and the educational task of bringing about their utilization in a plant is as difficult as developing market analysis and improved selling methods. The more severe the competition, the more important become good production methods. The superior management of the next decade will develop the production department to a high degree of precision, in accordance with principles and methods already formulated and available. Strong manufacturers will be able to take their profits by eliminating waste."

In the field of personnel relations Dr. Person said that management will win the co-operation of all the personnel of the enterprise, not as a matter of humanitarianism, but as a matter of technical necessity. "Without such co-operation all other provisions for excellence of management are unpaired. The entire personnel of an institution, from major executive to the latest recruit, should be a co-operating group of individualities." A spirit of co-operation, an atmosphere of live interest in the best management principles and practice, an *esprit de corps* of search for wiser policies and better methods, and individualities which have not lost the power of creation within co-operation, was stated to be the greatest asset of an organization.

The utilization of a new type of executive was pointed out in conclusion, as a special aspect of the new management. "The long sellers' market has developed highly one particular type of executive, the forceful, acquisitive, go-getter type which drives straight to results regardless of methods and cost," he said. And in another part, "Managers have come to realize that an organization must be balanced by the inclusion of the thinking, investigating, planning type of executive." The latter type, he said, will play a decidedly important part in the future.

#### Discussion

W. R. Mattson, Babson Statistical Organization, Wellesley Hills, Mass., in his discussion of the subject, expressed agreement for the most part with Dr. Person, and said that if the policies outlined were followed business men generally would get farther than by following the policies of ten years ago. Morris L. Cooke, Philadelphia, in his discussion of the subject, brought out the necessity of improved railroad service, saying that if one cannot move the goods manufactured at low cost they might just as well not be manufactured. "It seems generally admitted," he said, "that the future of railroading seems dark and unless someone can get in and get emphasis away from valuation and the financial side to the operating side, something is bound to happen." Richard A. Feiss, Cleveland, president of the society, emphasized the necessity of better quality production, the giving of better value. Large scale production and consequent lower unit cost in the light of bringing goods within reach of many that could not now afford them, creating new demand, was stated as the problem of management during the condition of a buyers' market. R. A. Wentworth, chairman of the management section of the American Society of Mechanical Engineers, presided.

#### Manufacturing Control at Corona Typewriter Plant

A paper on the "Organization and Management of a Medium-Sized Plant," by Percy S. Brown, works manager, Corona Typewriter Co., Groton, N. Y., was received with interest. The system of organization and methods of manufacturing control of the Corona com-

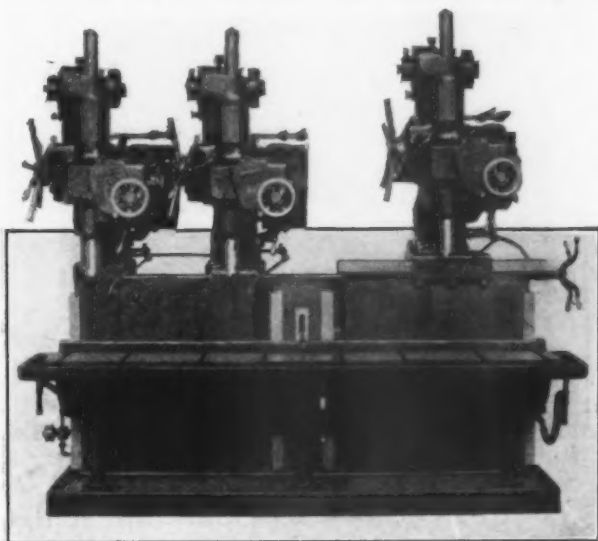
(Continued on page 1469)



### Gang Drills with Adjustable Head

Special gang drills with longitudinal movement provided for one of the heads, as shown in the accompanying illustrations, have been developed at the Colburn Machine Tool Plant of the Consolidated Machine Tool Corporation of America.

The machine in the left-hand illustration has a four-spindle column and the regular four-spindle table. The two left-hand heads are permanently placed on the column and have a fixed center distance. The third head is mounted on a plate having finished ways, as shown, the plate being attached to the column. The head has an adjustment of 27 in. and is moved by means of a screw and capstan handle. The head may be clamped securely in any position. The center distance between the second and the adjustable spindle is 27 in. minimum, and 54 in. maximum. Between the extreme left-hand head and the adjustable head the distance is 54 and 81 in., minimum and maximum, respec-



tively. Thus the total range between spindle centers is 27 to 81 in.

A machine can also be arranged with the same column and table, but having only two heads and instead of having the finished ways extending only half the length of the column, they can be lengthened and extended under the second spindle.

The second illustration shows a machine with a fourth head mounted on the ways, making a regular four-spindle unit with 27 in. center distance between spindles. In this arrangement the right-hand head may be removed and the third head adjusted so that the combination of the first and third or second and third heads can be used if desired. The machine illustrated is a Colburn No. 4 drill press, but the No. 2, a smaller size, or the No. 6, a larger size, can be arranged in a similar manner.

The rated swing of the No. 4 machine is 24 in., the distance between the center of spindle and face of column being 12 in. Each spindle has a drilling capacity of 2 in. in solid steel, and the spindles are double-splined to equalize the strain. Driving and feed gears are mounted inside of each head and run in oil, the gears being of chrome-nickel steel, hardened and heat treated. Shafts are of large diameter and mounted on ball bearings. Automatic trip is provided. The supporting brackets under the center and ends of the table are a feature. The column and table are heavily ribbed and the latter has a three-point bearing in the column.

On Nov. 22 the blast furnace at Warren, Ohio, of the Trumbull-Cliffs Furnace Co. turned out 867 tons of hot metal, establishing a new per diem record, and comparing with its previous high production of 811 tons. The stack has a rated capacity of 600 tons daily. Its production this month has been at the rate of 750 tons daily, or a monthly production of 22,500 tons.

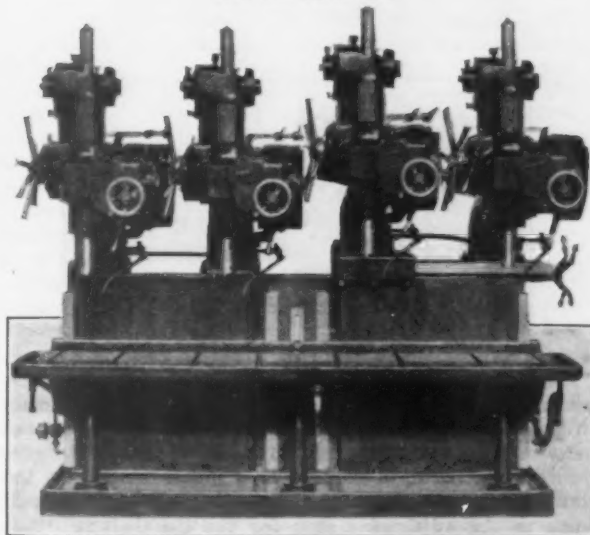
### Blackwood Electric Steel Corporation Officials Named

Announcement has been made of some of those who are to guide the destinies of the Blackwood Electric Steel Corporation, recently organized and which now has under construction, in Parkersburg, W. Va., a modern foundry capable of producing 300 tons of electric steel castings and alloy steels a month.

Alexander Blackwood, president of the new organization, at present is general manager, Farrell-Cheek Steel Foundry Co., Sandusky, Ohio, but will sever that connection on or before Jan. 1. He is a pioneer in the manufacture of small steel castings and many of the methods and standards which he developed are to-day common practice.

B. D. Thomas, who is to be vice-president and sales manager of the new company, at present is general sales manager, Acme Steel Co., Glassmore, Pa. He is to retire from that connection as of Feb. 1, next. Mr. Thomas started with the American Car & Foundry Co., in St. Louis, at the age of 14 years and had much practical experience in the foundry, shop and sales departments of that company. During the world war he was commissioned a lieutenant and later a captain

Special Gang Drill with Right-Hand Spindle Having Longitudinal Adjustment Is Shown at Left. In the arrangement shown below the right-hand head may be removed and third head adjusted in combination with the other two



in the Ordnance Department, and was in charge of the Pittsburgh district inspection division of shell manufacture.

Edgar M. Lewis, who is to join the Blackwood organization in an executive capacity, now is affiliated with the J. S. McCormick Co., Pittsburgh, foundry supplies, and previously has been with the Hill & Griffith Co., Cincinnati, and the E. J. Woodison Co., Detroit. He will assume his new duties Jan. 1.

### Reed-Prentice Readjustment

The Reed-Prentice Co. announces a readjustment of capital, under which the corporation will issue one new common share of no par value for each of the 7,500 shares of existing common of \$100 par value. There will also be authorized 8,500 additional no par common shares, making the total authorized capital consist of 16,000 common shares and 12,000 shares of preferred of \$100 par value. One share of common is to be issued for the good will, use of trade names, patents, drawings, patterns, fixtures, tools and gages of the Becker and Whitcomb-Blaisdell companies, and 2299 shares for the semi-manufactured inventory, of a book value of \$25,500. Also, 5525 shares of common are to be sold to the Becker Milling Machine Co. for cash at \$50 a share, with the right to subscribe on or before May 1, 1923.

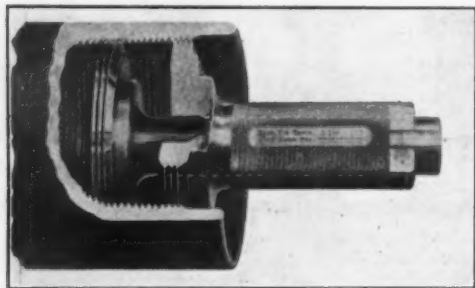
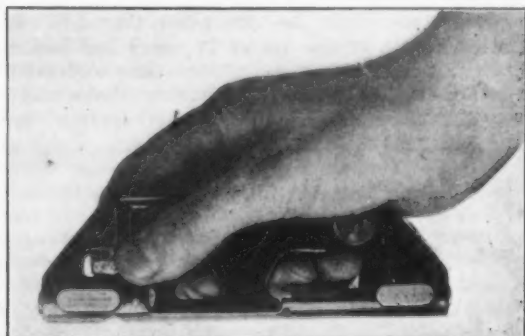
### THREE NEW GAGES

#### Pipe Gage, Pin Gage, and Gage for Steel Wheels Offered by Pratt & Whitney Co.

Three new gages, shown in the accompanying illustrations, one of which is an adjustable limit pin gage for internal measurements, have been added to the line of the Pratt & Whitney Co., Hartford.

The adjustable limit pin gage is emphasized as new in principle and design and it combines a Go and No Go internal gage in a single unit. Two spherical-ended hardened steel pins are carried in a cast iron frame, as shown in the illustration, the frame being similar to that of the company's Trusform gages and intended to combine strength with lightness and to resist tendency to distortion or warping.

One pin is adjusted to any size within its range by



means of opposed set screws which lock the pin firmly in position when tightened. The opposite pin works between two stops, one of which is adjustable to give limits from 0.001 to 0.025. This pin is moved by the thumb and finger inward to the Go position and outward to the adjustable stop for the No Go size. Adjustments may be sealed, and testing the setting or changing it to compensate for wear is simple. Four removable brass disks provide ample space for working.

#### Gage for Measuring Female Pipe Thread Taper

Another new gage offered is for measuring the taper of female pipe threads, the construction and application of which may be noted from the illustration.

The gage is marked one division equals 0.002 in., which signifies that one division on the handle of the gage represents a variation of 0.002 in pitch diameter in a length of 2 in., this length being the distance covered by the gage. In use the inner plug is first screwed down into the thread by hand followed by the outer gage, both parts being set hand tight.

If the taper is correct the witness line on the inner gage will come opposite the zero line on the graduations on the outer gage. Variation from the true taper is read directly on the scale. These gages are made up to order and slight variations from the specifications may be had.

#### A. R. A. Railway Gage

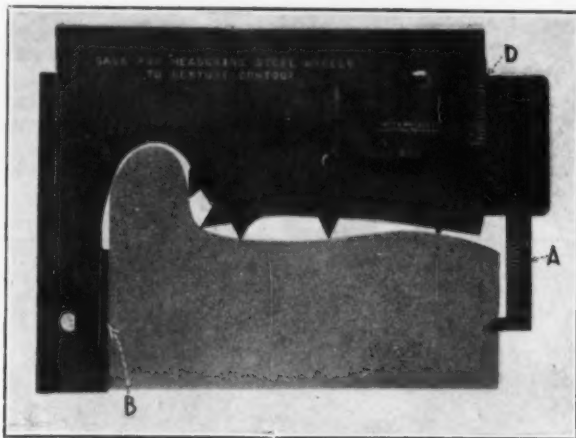
For measuring steel wheels to restore contour, the A. R. A. Railway gage illustrated has been developed. This gives a direct reading of the amount of service metal on a steel or steel-tired wheel as the basis for billing foreign roads for wheel replacements according to Interchange Rules. It tells whether or not a worn

wheel is worth turning to restore standard contour, and the amount of service metal which will remain after turning. This measurement can be made either before or after turning. The gage can be set to the wheel in a dark place and taken to the light for reading, thus avoiding errors and guess work.

The witness groove, limit of wear groove, is checked to assure that it is of the right diameter, which is 29½ in. for a 33 in. wheel. The contour is taken at several points so that the point of maximum wear may be found.

The application of the gage to a worn tread is shown in the illustration. The pointer A is swung to the right and the gage placed over the wheel with face B and point C in contact. The part A is then swung to engage limit of wear groove, the four sliding pointers pushed down to the wheel and the gage removed.

There is a scale on the back of the sliding front plate, under the pointer C, which gives the depth of



The Adjustable Limit Pin Gage for Internal Measurements Is Shown at the Upper Left. The gage for measuring the taper of female pipe threads is shown below it

The A. R. A. Railway Gage Shown Above Is Used for Measuring Steel Wheels to Restore Contour. It gives a direct reading of the amount of service metal

cut necessary at junction of fillet and tread to restore standard contour. The same information may be read at D. The amount of service metal is read at A.

### October Refractories' Statistics

Fire clay and silica brick statistics, compiled by the Refractories Manufacturers' Association for distribution among its membership and to the Department of Commerce, for the month of October, have been issued. The quantities given are the totals sent in by those who reported and the capacity figure is the combined economical producing capacity of those who sent in figures. The figures in parentheses are percentages arrived at by dividing the total economical monthly producing capacity into the figures given. October figures—in 9-in. equivalents, compare with those of September, as follows:

	Fire Clay	
	October	September
Capacity .....	74,925,557	74,456,694
Stock, Sept. 30.....	148,070,275	(197) *152,186,738 (204)
Production .....	53,335,843	(71) 46,241,911 (62)
Shipments .....	56,475,408	(75) 49,903,554 (67)
Stock, Oct. 31.....	144,930,710	(193) †148,522,095 (199)
New orders.....	49,474,143	(66) 56,781,987 (76)
Cancellations .....	759,325	(1) 201,569 (0)
Net new business..	48,714,818	(65) 56,580,418 (76)
Unfilled orders....	67,480,023	(90) 75,238,631 (101)

	Silica	
	October	September
Capacity .....	23,891,666	23,998,333
Stock Sept. 30.....	32,471,079	(136) *31,285,797 (130)
Production .....	13,793,281	(58) 11,295,216 (47)
Shipments .....	11,504,105	(48) 9,962,934 (41)
Stock Oct. 31.....	34,760,255	(145) †32,618,079 (136)
New orders.....	10,530,033	(44) 11,156,828 (46)
Cancellations .....	.....	27,119 (0)
Net new business..	10,530,330	(44) 11,128,709 (46)
Unfilled orders....	17,456,201	(73) 18,506,273 (77)

\*Aug. 31. †Sept. 30.



# Use of Standard Machine Tools Favored

## Special-Purpose Versus Standard Tools for Automotive Work —Standard Tools with Special Tooling— Simplicity in Fixture Design

**A** GENERAL criticism in disfavor of the prevailing policy of making large expenditures for special equipment when standard equipment might well serve the purpose, and also a plea for the reduction of the too-large investment carried under fixtures and permanent tools, was made by R. K. Mitchell, Maxwell Motor Co., Inc., in a paper on "Standard vs. Special Machine Tools for Automotive Production." The paper was read at the production meeting of the Society of Automotive Engineers, held in Detroit, Oct. 26 and 27, and an abstract of it follows.

There was a time when the automotive manufacturer found it necessary to build special machines for performing certain operations and making special parts.

The policy was to design special fixtures and machine tools to meet the special conditions. But often when the original intention is only to design a special fixture, the ultimate result is a fixture or machine tool that requires special driving and feed mechanisms. Then comes the question of whether to design special drives and feeds for some machine that is already in the plant, and this is the critical point in the argument between special tools and standard equipment. In many instances the only machine tool that will accommodate the special heads is one designed and built purposely to meet this one particular difficulty; so, we arrive at the stage we have so much desired to avoid which is the design and fabrication of special machine tools.

### Average Draftsman Cannot Design Special Tools

In the ordinary routine followed when building special machine tools, we are confronted with numerous obstacles. The first is that the average draftsman in tool-designing departments has had neither the engineering nor the production experience essential to the proper designing of special machine tools. His lack of knowledge as to proper stresses, correct bearings, loads and the details to be employed, together with lack of foresight in considering the interchangeability of parts, ease of replacement and the use, so far as possible, of standard parts, is reflected in the enormous first cost of the majority of special machine tools that are built under private supervision. The actual construction is performed usually in the tool room by high-priced labor, working an excessive amount of overtime, and the machine, finally completed, has yet to meet its first test. Few special machines have been devised and built that did not demand undue expense and delay in production, not to mention the necessity of many changes before they begin to function as intended.

A special machine tool in production requires a skilled or special operator, at least until those interested have become familiar with its care and operation. If the operator should be absent, loss of time and production must result before another man can be broken in.

Repair parts for special machine tools are costly items. Not infrequently patterns are broken, mislaid or left at the foundry and, when the casting is finally secured, it means day-and-night work in the tool room with additional expense and delay. But perhaps the foregoing will be accepted as constituting problems that will arise in any trade or line.

### Designs of Automotive Parts Change Constantly

The most forceful argument against special machine tools at present is the unstable design and development of automotive parts. When a designer produces a special machine tool to accommodate a certain part, he has no guarantee as to the life of that part

and, I venture to say, the average life of the majority of automotive parts, without change in design, is less than 6 months. Change in the design of a part makes about obsolete a special machine tool. At best, it demands such changes in construction, at a further prohibitive outlay, that the machine usually finds its way to the obsolete or salvage department long before its intended usefulness has been realized.

### Advantages in Using Standard Equipment

Machine-tool builders have stocked the market with a large variety of simplified, standard machinery that can be adapted to special operations and parts with slight extra expense. The standard machine tool is much cheaper than a special machine and being built on a quantity production basis, and designing and engineering charges are distributed over a greater number of units. The standard machine tool is available for prompt delivery. It has had a thorough trial in practical work before being placed on the market, and is out of the experimental stage. Reputable manufacturers of standard machinery build their machine tools so that the parts are interchangeable and, in case of service requirements, they are prepared to furnish any part promptly from stock. Consider for a moment the money that is tied up in special machinery patterns, extra castings and the like. With a standard machine tool in production in any large shop, if an operator is called from his machine other men just as familiar with the operation of the machine as the man who is absent are always available and capable of continuing production without loss of time.

Sometimes it is advisable to have special features on machine tools, such as a special number of spindles possibly set at different angles on a milling machine. It has been proven that a standard make of milling machine can be equipped with a suitable special head to take care of special work. If the special part made by the special head is ever changed or made obsolete, the manufacturer need not scrap the entire machine, but only the special tooling. The standard machine tool with the special tooling can be secured in much less time and with far less expense than the special machine tool. In the case of the standard machine tool, if the special part only is scrapped, the machine itself is adaptable for any other operation of a similar nature. These advantages are true also with lathes, grinders and many other standard machine tools.

### Special Fixture Design Should Be Improved

There is ample room for improvement in the design of special fixtures. Too little attention is paid to the needs of manufacturers of standard parts whose product, if properly investigated, will be found to contain unlimited possibilities for incorporation in the design of special jigs and fixtures. In a recent issue of a weekly periodical there was a full page spread, advertising the merits and possibilities of standard bushings. Although many companies like that place their engineering staffs and experience in their particular line at our disposal, still we do not pay enough attention to their claims and the merits of their products to consider them when designing our own pet tools and equipment.

As far as possible, when designing fixtures and tools, we should take advantage of all that the trade offers, and attempt to simplify our creations. The frequent use of the three fundamentals of jig and fixture work, the clamp, the V-block and the angle plate, is to be recommended.

As an instance I may cite the case of a large drum-type fixture recently designed, built and installed on a

machine. The cost was about \$2,500, including special drive gears and the like that were constantly breaking, delaying production and running up a continuous repair bill on this job. The annoyance and continuous expense demanded immediate action and the whole fixture was replaced with two small angle-plate fixtures on which V-blocks to oppose each other were fastened. One side was loaded while the part on the other side

of the fixture was being milled. These two fixtures cost about \$70 and actually increased production beyond that of the more elaborate and expensive fixture.

I believe that the tool designer is so prone to become intent on the design and construction of the fixture that he temporarily loses sight of the fact that the fixture or tool is not the ultimate issue, but only the means to an end.

## MECHANICAL ENGINEERS

### Main Features of Program of Annual Meeting in New York, Dec. 4 to 7

The tentative program of the annual meeting of the American Society of Mechanical Engineers, to be held in New York, Dec. 4 to 7 inclusive, in the Engineering Societies Building, 29 West Thirty-ninth Street, is as outlined below. Besides the sessions listed, there will be sessions on the power test codes, on the morning of Dec. 5; a session on steam tables on the afternoon of Dec. 5; a railroad session on the morning of Dec. 6; a standardization session on the morning of Dec. 7, and an ordnance session, an aeronautic session and a forest products session, all on the afternoon of Dec. 7. The meeting opens with a joint session in the afternoon on Dec. 4 with the American Society of Refrigerating Engineers. There will be a public hearing on the boiler code that afternoon, and in the evening Dexter S. Kimball, dean of the Colleges of Engineering, Cornell University, will deliver the presidential address before the society. On both morning and afternoon of Tuesday, Wednesday and Thursday are three or four simultaneous discussions and the following is a part of the program.

#### Management Session, Morning of Dec. 5

- Ten Years' Progress in Management, L. P. Alford, editor *Management Engineering*, New York.
- Installation of Management Methods, Wallace Clark, industrial engineer, New York.
- Progress reports of committees on:
  - Measurement of Managerial Ability, A. L. DeLeeuw, chairman.
  - Standardization of Terminology, F. E. Town, chairman.
  - Standardization of Graphics, J. J. Swan, chairman.

#### Machine Shop Session, Morning of Dec. 5

- Gearing for Planers, F. E. Cardullo, chief engineer G. A. Gray Co., Cincinnati.
- Testing Involute Spur Gears, M. Estabrook, Niles-Bement-Pond Co., New York.
- Application of Oilgear Variable-Speed Hydraulic Drive to Machine Tools and Manufacturing Processes, Walter Ferris, consulting engineer Bucyrus Co., South Milwaukee.
- Spherical Gears, C. H. Logue.
- Power Required for Removing Metal, F. A. Parsons, chief engineer Kempsmith Mfg. Co., Milwaukee.

#### Session on Training for the Industries, Afternoon of Dec. 5

- Joint reports on:
  - Extension and Correspondence Schools, J. A. Moyer, Boston.
  - Schools for Apprentices and Shop Training, R. L. Sackett, State College, Pa.
  - Industrial Education as Represented in Schools, C. R. Richards.

#### Research Session, Afternoon of Dec. 5

- Effect of Pulsations on Fluid Flow, H. Judd and D. B. Pheley.
- New Method of Determining the Effect of Speed upon the Strength of Gear Teeth, Wilfred Lewis, president Tabor Mfg. Co., Philadelphia.
- Torsion of Crankshafts, Dr. S. Timoshenko.
- Orifice Coefficients for Various Sizes of Pipes, J. M. Spitzglass, Republic Flow Meters Co., Chicago.
- Effects of Large Sudden Steam Discharges on Boilers—Report of Research Sub-Committee on Sudden Initial Pop Lift of Safety Valves.

#### General Session, Afternoon of Dec. 5

- Refining and Rolling Mill for Monel Metal, W. L. Wotherpoon, consulting engineer, International Nickel Co., New York.
- Dry Vacuum Pump Tests, Methods and Results, E. W. Noyes and H. V. Sturtevant.
- Diesel Engine Clutch Used in German Submarine U-117, William H. Nicholson.

#### General Session, Morning of Dec. 6

- Radial Elongation and Rotational Stresses in Cylindrical-Shaped Rotors of Uniform Diameter, C. M. Laffoon.
- Design of Flywheels for Motor-Driven Impulse Machines, C. O. Rhys, United Shoe Machinery Corporation, Beverly, Mass.
- Stress Distribution in Electric-Railway Motor Pinions as Determined by the Photo-Elastic Method, Paul Heymans and A. L. Kimball, Jr.

#### Fuels Session, Joint Session with Stoker Manufacturers' Association, Morning of Dec. 6

- Symposium on Stokers.
- Development and Use of the Modern Chain Grate, T. A. Marsh, chief engineer Green Engineering Co., East Chicago, Ind.
- Overfeed Stokers of the Inclined Type, G. I. Bouton, chief engineer Murphy Iron Works, Detroit.
- Design and Operation of Underfeed Stokers, H. F. Lawrence, American Engineering Co., Philadelphia.
- Chronological History of Stoker Development to the Present Day, A. H. Blackburn, chief engineer Under-Feed Stoker Co. of America, Detroit.

#### Power Session, Morning of Dec. 7

- The Commercial Economy of High Pressure and High Superheats in the Central Station, G. A. Orrok, consulting engineer, New York, and W. S. Morrison, New York Edison Co., New York.
- Feed Water Heating for High Thermal Efficiency, L. Helander, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
- Tests of Stirling Boiler of Detroit Edison Co.'s Connors Creek Station, P. W. Thompson, Detroit Edison Co., Detroit.
- Elasticity of Pipe Bends, Sabin Crocker, Detroit Edison Co., and S. S. Sanford.
- Transmission of Superheated Steam, B. N. Broido, New York.

#### Safety Engineering Session, Morning of Dec. 7

- (Under the auspices of American Society of Safety Engineers, with A. S. M. E. Committee on Safety Codes co-operating)
- Safety Codes, M. G. Lloyd.
- Safety Engineering in Connection with the Compression of Gases, Dr. A. D. Risteen.
- Safety Code for Grinding Wheels, G. E. Sanford, General Electric Co., Lynn, Mass.

## Wage Increases Slower

The latest monthly statement by the National Industrial Conference Board, 10 East Thirty-ninth Street, New York, summarizing wage changes reported during the past month shows that the upward trend of wages still continues, though at a slower rate than in the preceding two months.

The following table shows the movement of wage changes in the past six months:

Date	Reductions	Increases	Total Changes
May 15-June 15.....	23	26	49
June 15-July 15.....	25	21	46
July 15-Aug. 15.....	7	8	15
Aug. 15-Sept. 15.....	4	119	123
Sept. 15-Oct. 15.....	4	65	69
Oct. 15-Nov. 15.....	1	36	37

Labor shortage continues to stand out as the dominant reason for wage increases. It is especially a factor in the mining and building industries. Revival of activity in industries previously idle or operating on a curtailed basis, as in the case of the mining industry in Minnesota, is also a factor.

Most of the changes were voluntary on the part of the company, and the changes affecting the largest number of workers took place on the railroads and in mining.

The Glauber Brass & Mfg. Co., 7706 Platt Avenue, Cleveland, is planning to remodel its plant and make some extensions at an estimated cost of \$50,000.



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ESTABLISHED 1855

# THE IRON AGE

EDITORS:

A. I. FINDLEY

WILLIAM W. MACON

GEORGE SMART

C. S. BAUR, *General Advertising Manager*

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## Sheet and Tin Plate Prices

The reaffirmation of its former sheet and tin plate prices by the United States Steel Corporation last week caused much less surprise than would have been the case if the announcement had been made a month earlier, but still it has caused some. At one time the opinion was quite general in the trade that advances would be made in both products, but more recently the feeling has changed.

Some of the reasons given in the trade in favor of advances in these commodities were logical and forceful, while others were not. One argument put forth deserves particular attention, that being that the current market price of sheet bars, then \$40, Pittsburgh or Youngstown, not merely justified but actually necessitated advances, in the price of tin plate to rule during the first half of next year and in the price of sheets to rule during the first quarter. The tacit assumption was that since sheets and tin plates are made from sheet bars, the market price of the "raw material" is necessarily a governing factor. In ordinary affairs this is, of course, a perfectly logical basis. In this case it is not, for the reason that the important market commodities are sheets and tin plates, not sheet bars. Substantially all the sheets and tin plates made are sold in the market, while only a small proportion of the sheet bars made are sold in the market. In both sheets and tin plates by far the major portion of the output is from mills that make their steel themselves.

The familiar market development is for sheets or tin plates to advance or decline and for sheet bars to follow. An advance in sheet bars may peg an advance previously made in the finished product, but it does not originate an advance. A special case, of course, is presented when either sheets or tin plates change in price without the other product changing, but wide divergences of such a sort have been rare. Technically, the advance in the sheet market since the first of the year has not been matched by an advance in tin plate, but practically there has been substantial harmony, for the open price on tin plate was being cut rather deeply early in the year.

In these troublous and uncertain times the steel market cannot be made exactly as it ought

to be made for the best interests, in the long run, of all concerned. It would be well if we could have at this time a practical carrying out of the doctrine preached by Judge Gary years before the war, that "stable prices make stable demand." It was a new doctrine then, and it is needed even more now than it was at that time.

For the common good all parties in interest should strive to have prices in the iron and steel industry less fluctuating. Especially should it be considered in bad form to assume it right and proper that if one material is at an unreasonable price the extra should be carried through the successive stages of manufacture. This may be necessary at times, but the condition should be regarded as distinctly regrettable. If, merely to illustrate, coke is unnaturally high, and too high relative to pig iron, the philosophy of the trade should be that it is better for the common good that coke should go down than that pig iron should go up. We shall never reach normalcy over any other course.

## Progressive Foundrymen

Several features of the convention of the National Founders' Association held in New York last week deserve special mention because of their constructive value. It is easy to criticize unfavorably and to tear down, but it is not always so easy to make helpful suggestions and to follow them by effective supporting work. It is the fashion to rail at Congress and condemn its shortcomings, but the critics seldom point the way for improvement.

Immigration is one subject the discussion of which has included much criticism of Congress for passing the "percentage bill." It is generally recognized that although the act may have been justified as a post-war measure, conditions have changed and its modification becomes imperative. The question is, How shall it be modified? The resolutions adopted by the founders' convention, published in full elsewhere, do not attempt to define exactly the kind of measure that should be passed, but they do lay down some fundamental principles which should be regarded. The resolutions are planted squarely on Madisonian principles, which declare that the ports of the United



States should be open to receive all who will contribute to its welfare and be a real addition to its population. As to how these principles should be applied, the resolutions offer excellent suggestions. The authors clearly had in mind the welfare of the men and women who come to this country, as well as the interests of those who are now citizens of the United States. The plan of determining as far as possible, at the foreign home of the would-be immigrant, whether he is worthy to be admitted to the United States certainly ought to be adopted, and the suggestion that the immigrants should be informed as to conditions in the New World is also sound. Whether the Government could supervise the distribution of immigrants, however, is open to some doubt.

The action of the convention looking to the preparation of an up-to-date course of study on foundry practice is a progressive step. As pointed out by Mr. Lane, in his presentation of the subject, great changes have taken place in foundry practice within a few years. When the best course of instruction now in existence was written the molding machine was in its infancy, and many other changes in equipment and practice have taken place. The task of bringing the old course up to date and making it conform to requirements of different classes of people is not an easy one, but the National Founders' Association has been progressing as the number of its members having valuable experience has increased and its ablest men can be depended upon to carry this important undertaking to success. It is encouraging to note, as reported by Commissioner McClintock, that progress is being made in getting a larger number of educated men interested in the work of the foundry.

This country has been rather surfeited with investigations by Congress and by State legislatures, but the light of publicity seldom has turned on the labor unions. When, in a New York State investigation, a prominent labor leader was put on the stand, his confessions of the weaknesses of labor unions were no less interesting than his insistence that nothing be done about them. They are important as indicating to some extent what might be expected from a thorough inquiry. Labor leaders are happy to see other folks investigated. Why not submit to a little of it themselves? The suggestion of President Barr deserves consideration.

### A Refractory Survey

An industrial survey of unusual interest is about to be made by the Refractories Manufacturers' Association to obtain complete information regarding the furnaces in which refractory materials are used. An elaborate blank has been prepared in which 25 questions are asked relating to type of furnace, product of furnace, fuel, kinds of refractories used and similar points; temperature and combustion, particularly combustion conditions; abrasion, calling for description and final results; slag action and other features.

In the past few years it has been found that owing to rapidly changing conditions in many industries the demand for brick of widely differing

characteristics has increased, and there is reason for believing that often the refractories used were not those best adapted for the purpose. Studies of furnace conditions frequently have shown the cause of the trouble, and the association believes that the thorough investigation which it has now planned will greatly help both manufacturers and users of refractories, eliminating waste and reducing costs. The investigation is one which will involve time, much labor and patience and it is worthy of the support of all manufacturers who are users of refractories.

### Associations Made Liable

That voluntary associations, including labor unions, are financially liable for their acts and in that respect are on the same basis as corporations and individuals, was established by the voters of a State in referendum for the first time at the recent election in Massachusetts. The majority was small, but it is believed this was due to the coupling of the question on the ballot with two others against which great majorities were polled. One of the two would have meant much stricter enforcement of prohibition had the vote been yes; the other would have established a state motion picture censorship. So the word was passed around systematically to "vote no on everything," which many unthinking voters did. Yet, with a very heavy vote, the majority was favorable to the establishment of the liability in the courts of voluntary associations. The expression of opinion was most emphatic.

Other States already had similar laws, among them the industrial States of New York and Connecticut. But their statutes were enacted by their legislatures. The Massachusetts Legislature for the first time in its history was favorable to such an act as was proposed. Labor fought the bill strongly and persistently. It passed the legislature of 1921, and then the referendum was invoked. Consequently there was plenty of time for a campaign of education, and the opponents of the measure conducted a vigorous campaign. Their efforts, however, reacted against them. The voters, men and women, saw the words "fair play" written into the proposed law, and cast their ballots accordingly.

The law is a just one. Labor union men agree that if any such statute had to go on the books this is as good a one as could be framed. While it provides that any voluntary association composed of five or more members can sue and be sued in its common name, "the separate real or personal estate of any individual member shall not be subject to attachment or execution in any suit against such association." The member is placed in much the same position as that of the stockholder of an ordinary corporation. The company may be sued, but, under ordinary circumstances, he cannot be made a party to the suit.

In the famous Danbury hat cases, which went to the full bench of the United States Supreme Court, all property, real or personal, that could be found as belonging to any member was attached. The promoters of the Massachusetts bill, following the example of other States, recognized that a

law which would permit of such wholesale actions would be as unfair in the one direction as the absence of any law would be in the other direction. They wished only to establish an equitable distribution of legal responsibility. As it turned out, it is well that the labor leaders invoked the referendum and placed the matter before the people as a whole, to receive their stamp of approval or disapproval. The vote cast at this election was one of the largest in the history of Massachusetts. The result of the referendum may be regarded as final, and its influence in extending the application of the principle still further is by no means inconsiderable.

### Less Pig Iron for Steel

Because of accumulating evidence that less pig iron per ton of steel is being used in steel making, the question is often asked whether the change is permanent. Because of fuel and other conditions the rate of pig iron production in the United States this year has been much less than that of steel. It is to be noted, however, that while the spread between the pig iron and steel output is large, it is only a little larger than it was in 1920; in other words, the unfavorable economic conditions this year have only slightly accentuated a trend which has existed since the war.

There is, however, a marked tendency the world over to make less and less pig iron in proportion to steel. This appears from an analysis of the pig iron and steel outputs of the leading countries in the last three years compared with that of 1913. The countries represented in this analysis are the United States, United Kingdom, Canada, France, Belgium, Germany and Luxemburg. The figures used are those published by the National Federation of Iron and Steel Manufacturers of Great Britain.

In 1913 the pig iron production of the seven countries was 68,800,800 gross tons and the steel ingot output was 65,703,600 tons, or a difference in favor of pig iron of 3,097,200 tons. The corresponding data for the same countries for 1920, 1921 and the first eight months of 1922, put in the form of a table, are as follows:

*Pig Iron and Steel Output of Seven Countries in Gross Tons*

	1920	1921	1922*
Steel ingots .....	63,733,200	37,317,600	35,171,200
Pig iron .....	56,720,400	31,192,800	28,500,000
Difference .....	7,012,800	6,124,800	6,671,200

\*Eight months, with Germany estimated.

It thus appears that the spread between the steel and pig iron outputs of the leading producing countries has increased from 7,012,800 tons in 1920 to a yearly rate of 10,006,800 tons in the first eight months of 1922. This wide spread this year is in contrast with a balance on the other side in 1913, when the pig iron total was 3,097,200 tons more than that of steel ingots. In other words, the seven countries which in 1913 were producing 258,100 tons *more* pig iron than steel per month, are now making 833,900 tons per month *less* pig iron than steel.

Among the causes of this marked change, the increased use of scrap in steelmaking is chief.

The abundance of scrap from the war has been a factor in Europe, and in the United States less pig iron in steelmaking is recognized practice. Imports of scrap into Germany to September this year have been over 47,700 tons per month, exceeding all records. The larger production of basic open-hearth steel in Great Britain in recent years, involving the use of more scrap, is well known. Another factor to be considered is the decline in the percentage of foundry iron production. Foundry activity has been relatively less, both at home and abroad. Busy foundries mean new industrial enterprises and extensions of those existing, calling for all forms of equipment. The world has not been building new factories since the war.

Important changes are going on. It has been found possible to use less and less pig iron in steel works practice, without the sacrifice of quality. The movement is a broad one and is worthy of careful study. If the tendency continues it means the conservation of iron ore reserves and the postponement of the day of scarcity in good ores of which something too much was commonly predicted a few years ago.

### Turns in the Railroad Situation

The congressional elections went against the railroads. Three members of the Senate Committee on Interstate Commerce were defeated for re-election and in all two minority and three majority party Senators who voted for the transportation act failed of re-election. At the same time all the senatorial candidates in the West and Central West who attacked the railroads were elected, prominent among these being Mr. La Follette.

The reaction of the stock market was prompt. In 16 days Northern Pacific had declined 10 points, Baltimore & Ohio, Chesapeake & Ohio, Rock Island, Great Northern, New York Central and New Haven 8 points or more, and Union Pacific, St. Louis & San Francisco, Chicago, Milwaukee & St. Paul and Reading more than 5 points, while Pennsylvania, just put back on a 6 per cent basis, declined from 48 $\frac{1}{8}$  to 46 $\frac{1}{8}$ .

The transportation act is not doing so much to rehabilitate the railroads and put them where they belong for the best interests of the country as was expected. But judging by what the successful candidates for the Senate and House said against the railroads and against the act in their campaigns, and judging by the loss of friends it sustained by the election there is a prospect of the act being eventually amended in manner adverse to the railroads.

The attitude of men serving in Congress may be different from what is indicated by campaign utterances. There is an opportunity for these men to become better posted and more serious minded. The untrue statements made in the campaign indicate gross lack either of honesty or of information.

It is a curious fact, in the light of many things that are said about the railroads and about the transportation act, that of all the broad national subjects that come up for consideration there is



scarcely another on which such complete and precise information is available. The facts are gathered and can be had upon request.

In particularly useful form is a statement just compiled by the Bureau of Railway Economics, giving various details of Class I roads as a whole from the fiscal year 1911 through the calendar year 1921, showing investment and income account, employees and their compensation, freight ton-mileage and passenger mileage, traffic averages, equipment in service, and train, car and locomotive miles.

The figures of investment in road and equipment as shown below are drawn from the statement just mentioned. As of interest in this connection, we have computed the amount per mile of line. The return on the stated investment is also shown:

Class I Railroads			
	Investment	Per Mile	Return Per Cent
1911*	\$14,246,167.475	\$66,200	5.08
1912*	14,632,497.022	67,100	4.84
1913*	15,284,763.489	68,500	5.15
1914*	15,842,127.273	70,400	4.17
1915*	16,257,146.632	71,100	4.20
1916*	16,688,440.056	72,300	5.90
1916†	16,884,440.038	73,000	6.16
1917†	17,762,152.127	76,400*	5.26
1918†	18,213,629.613	78,100	3.51
1919†	18,529,749.653	79,300	2.46
1920†	19,061,239.186	81,100	0.09
1921†	19,496,000.000‡	83,300	3.08

\*Fiscal year. †Calendar year. ‡Partly estimated.

The railroad baiters have said often in the past year that the transportation act "guarantees" the railroads a 6 per cent return. It does not. One thing it does do is to limit them to a disbursement of 6 per cent if by any possible chance they should make more. Last year they secured only half the amount mentioned.

It is true that the actual value of the railroads is not known. At great expense a valuation is now being made, and this quite possibly may show more than the railroads claim in their present accounts. The important point is that in any event the accounts cannot be much out. What makes a 3 per cent return by railroad figures would be only 4 per cent return if the value is 25 per cent below the railroad accounts, and it cannot possibly be so much below. It easily may be above.

### Ford Steel Plant and Rolling Mills

The Ford Motor Co., Detroit, which for two years has produced its own pig iron at its River Rouge plant, is planning, as announced previously, for the erection of a steel plant containing a number of electric furnaces, two of them of large size. Several rolling mills are planned also, and the Morgan Construction Co., Worcester, Mass., which will act as engineer for this part of the installation, has received an order for the first of these mills. Much of the construction is too heavy to be made in New England, but all of the designing and a portion of the work will be executed in the Morgan company's shops in Worcester.

Further reports of the use of roller bearings in steel mills show that the Bethlehem Steel Co. is equipping 115 charging cars with Hyatt bearings, the Wisconsin Steel Co. is similarly equipping 75 charging cars and 65 ingot cars, the Youngstown Sheet & Tube Co., 270 ingot cars, and the Tennessee Coal, Iron & Railroad Co., at the Fairfield plant, is equipping the mill tables on the 11-in. merchant bar with the same type bearing.

### Youngstown Foundry & Machine Co. May Sell Its Properties

A proposal to sell their properties will be considered by shareholders of the Youngstown Foundry & Machine Co., Youngstown, Ohio, at a special meeting Dec. 23. Myron I. Arms, II, president of the Aetna Foundry & Machine Co., Warren, Ohio, and formerly treasurer of the Republic Rubber Corporation, Youngstown, is negotiating for the company's plants.

Last spring negotiations were conducted between these two interests, but failed because of inability to agree upon valuations. It is understood this difficulty has now been removed and that the owners of the Youngstown Foundry & Machine Co. are willing to sell their interests for a much lower price than they asked in the spring.

Financial arrangements are being conducted by the Aetna company, which is planning a bond issue to finance the purchase. If effected, the combination will have a capitalization approaching \$1,000,000. The Youngstown Foundry & Machine Co. operates two plants in Youngstown producing general mill equipment. Its capitalization is \$250,000, but its properties are worth considerably more, it is claimed.

At Warren, the Aetna company operates a somewhat smaller plant, producing castings, mill machinery, pickling and galvanizing equipment. W. J. Wallis is president of the Youngstown Foundry & Machine Co.; F. A. Williams is vice-president and B. G. Parker is general manager.

### National Tube Co. Will Start Riverside Works Soon

WHEELING, W. VA., Nov. 27.—Beyond the warming up of one of the blast furnaces of the National Tube Co. at Benwood, W. Va., preparatory to blowing it in late this week, there will be no material change in iron and steel plant activities in this district this week. With the starting of the National Tube Co. stack, it will be only a matter of a short time before the steel works and pipe furnaces start up. Wheeling Steel Corporation units are averaging about 75 per cent capacity operations, while the Weirton Steel Co., Weirton, W. Va., still is running practically full. Of the other Steel Corporation plants in the district, the Bellaire, Ohio works, Carnegie Steel Co., still is down, while the Mingo, Ohio works has two blast furnaces on out of four and is in full operation on steel works and sheet bar mills. The American Sheet & Tin Plate Co. is running practically full at its Aetna-Standard works, Bridgeport, Ohio and Laughlin plant, Martins Ferry, Ohio, but its LaBelle plant in this city is idle.

### Plant of Cromwell Steel Co. Sold

The plant of the Cromwell Steel Co., Elyria, Ohio, which was offered for sale Nov. 22 under receivership proceedings, was purchased by W. E. Guerin, vice-president of the Guardian Savings & Trust Co., Cleveland, for \$1,100,000, or approximately two-thirds of the appraised value, which was \$1,600,000. Mr. Guerin, as purchaser, represented the trustee of the bondholders and the bondholders' committee. The bonded indebtedness of the company is \$2,000,000. A new company has been organized under the name of the Midland Seamless Tube & Steel Co., having a small capital stock which will act as a holding company until a new organization can be effected. Steps are now being taken to form a permanent organization and to provide the necessary financing. C. A. Orr, formerly vice-president and general manager of the company, has been in charge of the property since last January, when he was appointed receiver. He will assist the bondholders in the reorganization.

The Cromwell plant has four open-hearth furnaces, a 30-in. bar mill and a 20-ton steam hammer, the latter being provided for breaking down ingots, taking the place of a blooming mill. When the plant was in operation, the company specialized on bars for making seamless steel tubing.

## JAPANESE PRICES WEAKER

### Copper Weakens as Consumers Turn to Aluminum —All Stocks Increase—Tin Plate Better

TOKIO, JAPAN, Nov. 2.—Price cutting in an effort to draw consumers back into the trade features the weakening copper market. But little buying is done, and holders are overloaded with surplus stock.

Domestic smelters are not bothered with competition from America, as the new tariff puts American copper out of reach. It is quoted in Yokohama now at about 47.50 yen per picul. Domestic smelters offer electrolytic copper at from 44 to 46 yen. The lack of buying is attributed to the fact that wire manufacturers are replacing copper with aluminum, as cheaper and just as durable. In November, the Tokio city tramway is to buy 500 tons of copper, and the price to be offered is attracting keen attention.

Sales of iron and steel from stocks of the Yawata Iron Foundry are reported not sufficient to prevent further accumulations. It is calculated that by the end of November the stock of steel at the Yawata works will have increased to 90,000 tons and pig iron to 150,000 or 160,000 tons. Rail orders are said to be favorable, and the foundry has orders from the South Manchuria Railway Co. for 3000 tons and from Formosa for 1000 tons, all 60-lb. sections.

The tin plate market continues brisk and stocks are decreasing gradually. The stock on the Osaka and Kobe markets is reported to be about 25,000 boxes. Welsh 170-lb. boxes are quoted at 21 yen for spot delivery, an improvement of 20 sen. Prices of tin plate ruling in the London and Japanese markets are about the same at present.

Stocks of French nails in the Kwansai district amount to 100,000 drums, and those in the Kwanto district are estimated at 50,000 drums. A large portion of the stock was bought at about 12 yen. On the foreign market German nails are quoted at 13 yen and American nails at 12.50 yen. Depressed by the business slump, quotations on French nails stand at 10.70 to 10.80 yen, while Japanese goods are now as low as 11 yen. However, there has been some demand for these of late and the monthly disposition of stock amounts to 30,000 drums. In addition, most of the wholesale merchants have suspended the import of goods and no additional supplies are to arrive until next spring. Under these circumstances, the market, it is thought, will show an upward tendency. At present iron rods for the manufacture of French nails are purchasable at 117 to 120 yen and it is more profitable to manufacture French nails with this material than to import goods from the foreign market. It is expected that imports of French nails will therefore cease.

On the wire market, galvanized wire remains firm, No. 8 being quoted at 9.50 yen and Nos. 10 and 11 at 10.50 yen. The home market has been deeply depressed by the slump and negotiations for the imports of goods have ceased. However, arrivals of goods during July and August were large, and the quantity was estimated as sufficient to meet the demand for 18 months. Such being the case, quotations are weak. No. 8 plain wire is quoted at 9 yen, and Nos. 10 and 11 at 9.50 or 9.60 yen. Compared with the quotations ruling during July and August, this is a drop of 1 yen.

### Bethlehem Steel Export Corporation

The officers of the Bethlehem Steel Export Corporation, which will handle the export business of the Bethlehem Steel Corporation, are the following: E. G. Grace, president; Frank Purnell, vice-president; R. E. McMath, secretary. Mr. Purnell has been vice-president of the Consolidated Steel Corporation, which recently ceased selling and is now liquidating its affairs. The offices of the Bethlehem Steel Export Corporation are on the fifteenth floor of the Cunard Building, New York.

## Canadian Scrap Market

TORONTO, Nov. 27.—The demand for iron and steel scrap is at a minimum with consumers showing little interest with regard to scrap either for spot consumption or for future delivery. In the majority of cases dealers' yards are well stocked with old material in most lines, but stove plate and machinery cast are scarce. Local dealers do not look for any noticeable change in conditions until after the turn of the year, but the majority are optimistic when mentioning possible conditions for 1923. At the present time consumers are of the opinion that prevailing prices are too high and consequently they are remaining out of the market or are buying only on a hand to mouth basis with the expectation that an adjustment of prices will be forthcoming in the early future.

We quote Toronto dealers' buying prices:

Gross Tons	
Heavy melting steel.....	\$11.00
Steel axles .....	16.00
Axles, wrought iron.....	16.00
Car wheels, iron.....	16.00
Rails .....	11.00
No. 1 wrought scrap.....	11.00
Boiler plate .....	8.00
Steel turnings .....	7.00
Machine shop turnings.....	7.00
Heavy axle turnings.....	6.00
Wrought pipe .....	6.00
Flashings .....	6.00
No. 2 busheling scrap.....	5.00
Hydraulic compressed sheets.....	5.00
Cast borings .....	5.00
Bundled sheet scrap.....	4.00
Plate and shape shearings.....	7.00
Net Tons	
No. 1 machinery cast.....	18.00
Stove plate .....	14.00
Standard car wheels.....	15.00
Malleable scrap .....	11.00

## Scrap Weak at Detroit

DETROIT, Nov. 27, 1922.—The pre-inventory period is showing its effect on scrap production, the tonnages offered for December delivery being considerably smaller than the November lettings. Interest is being shown in the offering of one of the largest producers, consisting of approximately 2500 gross tons of turnings, borings, flashings and hydraulic compressed. Prices in general have had a tendency to weakness.

The following prices are on a gross ton basis, f.o.b. cars producers' yards, excepting stove plate, automobile and No. 1 machinery cast, which are quoted on a net ton basis:

Heavy melting steel.....	\$14.50 to \$15.50
Shoveling steel.....	15.00 to 16.00
No. 1 machinery cast.....	19.00 to 21.00
Cast borings.....	12.00 to 13.00
Automobile cast scrap.....	21.00 to 23.00
Stove plate.....	16.50 to 18.00
Hydraulic compressed.....	15.50 to 16.50

## Late Youngstown News

YOUNGSTOWN, Nov. 28.—The Youngstown Sheet & Tube Co. is preparing to blow in one of the two blast furnaces at its plant in Hubbard, Trumbull County. This will increase the number of its active stacks to five of its six.

In trade circles, a sale of 1000 tons of basic pig iron is reported at \$27.50.

Sharp curtailment in sheet mill operations is predicted for December, owing to the irregular condition of the market.

One small blast furnace of an independent steel maker will be blown out within the next two weeks.

The foundry and pattern shop of the Velte Foundry & Machine Co., Mars, Pa., were almost entirely destroyed by fire on the night of Nov. 23. Damage, covered by insurance, is estimated at \$40,000.



# Bethlehem Steel Co. Acquires Midvale

Merger of Two Leading Independents Will Give the Purchaser  
7,600,000 Tons Ingot Capacity or About  
15 Per Cent of the Country's Total

**P**RESIDENT EUGENE G. GRACE of the Bethlehem Steel Co. announced Friday, Nov. 24, the purchase by Bethlehem of the Midvale Steel & Ordnance Co., subject to ratification by stockholders. Rumors of such a merger had appeared from time to time but actual negotiations, it is now stated, had been carried on only within the past month.

Bethlehem will take over all of the properties of the Midvale Steel & Ordnance Co. excepting the Nicetown, Pa., plant, which was the original Midvale works. A separate company will be organized to operate this plant, as was the plan when the Midvale-Republic-Inland merger was under discussion some months ago, and the stock in this company will be distributed among the present stockholders of the Midvale Steel & Ordnance Co.

The acquisition of the Midvale properties will give the Bethlehem Steel Co. a total ingot producing capacity of 7,600,000 tons annually, or about 15 per cent of the country's total. It will rank second to the United States Steel Corporation, which has a rated capacity of about 22,700,000 tons annually. Taken together, the Steel Corporation and Bethlehem Steel Co. will have 60 per cent of the total ingot capacity of the United States.

Of its present ingot capacity, Bethlehem acquired 1,840,000 tons in its recent purchase of Lackawanna Steel Co. This added to the 3,217,000 tons it already had gave it a total of 5,057,000 tons. Midvale's rated capacity, exclusive of the Nicetown plant, is about 2,700,000 tons annually.

President Grace's statement of Nov. 24 was as follows:

"The board of directors of Bethlehem Steel Corporation at a special meeting held this afternoon authorized contracts for the purchase of the plants and other assets of Midvale Steel & Ordnance Co. and of Cambria Steel Co., excepting the ordnance plant and other business located at Nicetown, Pa., and assets appurtenant thereto.

## Payment in Bethlehem Common Stock

"In payment for the properties to be acquired Bethlehem Steel Corporation, besides providing for the assumption of the bonds and other indebtedness of the Midvale and Cambria companies (excepting current liabilities appurtenant to the operations of the Nicetown plant), will issue about \$97,650,000, par value, of the Bethlehem common stock, of which \$95,000,000, par value, will go to the Midvale company for distribution on dissolution to its stockholders, and the balance to the holders of the stock of Cambria not held by Midvale. As a result of these purchases the stockholders of the Midvale company will receive for each two shares of \$50, par value, of the Midvale company stock, \$95, par value, of the Bethlehem common stock, together with a pro rata share of the stock of the new corporation to which the Nicetown plant and the assets appurtenant thereto are to be transferred.

"The board of directors of Bethlehem Steel Corporation has authorized these additional acquisitions in pursuance of its policy of building up a complete line of steel products which it has followed ever since Mr. Schwab and his associates became interested in Bethlehem.

"Through the acquisition of the properties of the Midvale and Cambria companies, Bethlehem will acquire plants at Coatesville and Johnstown, Pa., and Wilmington, Del., and important developed iron ore properties in Michigan and Minnesota, as well as developed coal properties in Pennsylvania. The ability

to distribute and mix the Midvale coal and ores with Bethlehem's present coal and ore supplies will be of much advantage to both sets of properties in that operating costs can be reduced.

## New Products for Bethlehem

"The acquisition of the Midvale and Cambria properties will give to Bethlehem important lines of steel products which it does not now manufacture, such as wire rods, wire and wire products, steel freight and mine cars, steel wheels, boiler tubes, agricultural implement parts, etc.; in fact, it will place Bethlehem in position to produce all the so-called commercial steel products with the exception of pipe and seamless tubes. For these Bethlehem is planning to build plants at one of its existing properties.

"Bethlehem's present annual ingot capacity of 4,890,000 tons will be increased to 7,600,000 tons by the Midvale-Cambria purchase.

"These acquisitions will constitute an advantageous development of Bethlehem geographically, in that they will supplement its present plants by a large steel plant with low-cost production, located at Johnstown, Pa., from which an economical distribution of its products can be made into the important Central West industrial field, which Bethlehem cannot now advantageously serve.

"No increase in the aggregate indebtedness is necessary or contemplated for this transaction. With the additional common stock to be issued for the properties to be purchased and with the 8 per cent preferred stock converted into the new 7 per cent cumulative preferred stock, the approximate capitalization of Bethlehem Steel Corporation will be:

\$213,500,000	funded debt
62,000,000	7 per cent preferred stock
about 180,250,000	common stock

## Investment of \$465,500,000

"The combined investment in property and plant, less depreciation and depletion, will be about \$465,500,000 and the aggregate net quick assets will be about \$133,700,000.

"The stockholders' meeting and the other proceedings will require sixty to ninety days before the transaction can be concluded. In the meantime, the Bethlehem management will be acquainting themselves with operating conditions at the Midvale and Cambria properties so as to facilitate the taking over of the active management when the transaction shall have been ratified by the stockholders of the respective companies."

## A Midvale Statement

W. E. Corey, chairman of the board of directors of the Midvale Steel & Ordnance Co., issued a statement to the stockholders of that corporation in which he told of the approval of the sale by the boards of directors of the Midvale Steel & Ordnance Co. and the Cambria Steel Co. After giving the terms as stated by Mr. Grace, his statement continues:

"The officers and directors of the Midvale Steel & Ordnance Co. have for a long time been convinced that a larger steel tonnage, a wider diversity and a better distribution of products than their corporation enjoys is essential, to effect the savings in manufacturing, selling and administrative costs, and the economies in mining ore, coal and limestone, necessary to secure the best results in the steel business. The sale to Bethlehem has been arranged with these things in view.

Stockholders' meetings will be called to approve the transaction."

#### Midvale Organization and Properties

The Midvale Steel & Ordnance Co. was organized Oct. 5, 1915, by interests which acquired the Midvale Steel Co., Nicetown, Pa., and the plant of the Worth Brothers Co. at Coatesville, Pa. In February, 1916, the Midvale Steel & Ordnance Co. bought the properties of the Cambria Steel Co., Johnstown, Pa., and the two have since been operated as one company, though the Cambria Steel Co. has retained its corporate identity, due to the fact that a number of its stockholders did not exchange their stock holdings for stock of the Midvale company.

Officers of the Midvale Steel & Ordnance Co. are: William E. Corey, chairman of the board; A. C. Dinkey, president; W. B. Dickson, vice-president and treasurer; A. A. Corey, Jr., vice-president in charge of operations; John C. Neale, vice-president in charge of sales; Robert Brewster, secretary; Marshall Lapham, controller.

The Cambria plant, which is the company's largest unit, has 11 blast furnaces with a total annual capacity of 1,700,000 tons, steel foundry, car axle department, steel car building shop, bar mills, wire mills, rail, plate and structural mills and a wheel plant. Its Gautier works, where its bar mills are located, turns out a variety of bar mill products, including special sections for automobile rims, steel window sash and crescent bars. The wheel plant is also one of the most important units of its kind in the country and has capacity for 300,000 wheels per year. Its wire mills have capacity for 120,000 tons annually of wire rods; 95,000 tons of wire; 40,000 tons of galvanized wire; 12,700 tons of barbed wire; 30,000 tons of wire fencing; 900,000 kegs of wire nails.

There are also at Johnstown 612 by-product coke ovens, annual capacity, 1,360,000 net tons of coke, with 60 more under construction and 60 more planned. These ovens are served by coal mines in Cambria County, with estimated annual capacity of 2,400,000 tons.

At Coatesville, Pa., the Midvale company has three blast furnaces, with a rated capacity of 450,000 tons annually; plate mills and charcoal iron fires for boiler tubes. The plate mills have a capacity of 310,000 tons annually. About 25,000 tons of boiler tubes can be produced annually.

The iron ore properties of the Midvale company are an important asset. It owns the Penn Iron Mining Co., Menominee range, Lake Superior, with about 2,500,000 tons; one-fifth Hanna Ore Mining Co., and 15 per cent Hoyt Mining Co., Mesabi range, 6,000,000 tons; one-seventh of the Scranton mine, Mesabi range, and one-seventh of Plymouth, Gogebic range, about 5,000,000 tons; one-fourth of Bennett mine, Mesabi range, 5,000,000 tons; one-half of Mahoning mine, Mesabi range, 50,000,000 tons; one-fourth interest in Zenith mine, Vermillion range, 2,000,000 tons; total, about 70,500,000 tons. There is also a one-third interest in the Mesabi Iron Co., with its large deposits of magnetite on the Eastern Mesabi and its sintering plant at Babbitt, Minn. The company has some 300,000,000 tons of ore in the Buena Vista group on the northeast coast of Cuba—these ores being like those of the Bethlehem mines (Mayari) in the same district. At Sterlington, N. Y., near the New Jersey State line, its Ramapo Ore Co. has a considerable deposit.

One of the interesting developments of the Bethlehem-Midvale consolidation will be the handling of sales. The acquisition of Lackawanna Steel Co. brought no change in the policy of Bethlehem in maintaining its general sales organization at Bethlehem, Pa. The general sales offices of the Midvale Steel & Ordnance Co. are in Philadelphia. The Midvale company, as indicated above, produces a number of products which the Bethlehem company has never made. Its Cambria works has enjoyed a large trade in the Detroit automobile district, particularly in the furnishing of spring steel, bars and special sections; it has also had a large agricultural machinery trade. No announcement has been made regarding executive and sales officials of the Midvale Steel & Ordnance Co. who will continue under the Bethlehem regime.

#### Federal Trade Commission's Attitude

WASHINGTON, Nov. 28.—The Federal Trade Commission has under advisement the plan of the proposed acquisition of the Midvale Steel & Ordnance Co. exclusive of its Nicetown, Pa., plant, by the Bethlehem Steel Corporation. It is expected that the commission will decide on its course in the near future. The plan was laid before the commission by Attorney Paul Cravath, counsel for the steel interests, and is understood to be a detailed outline of the proposed merger as it will be submitted to the interested stockholders. President Grace of the Bethlehem Steel Corporation is quoted to the effect that the proposed plan has been approved by Attorney-General Daugherty.

It is recalled that the Department of Justice gave approval to the proposed Midvale-Republic-Inland merger and of the Lackawanna purchase by Bethlehem, pointing out that such consolidations would not violate the Sherman, Clayton, or Webb-Pomerene acts. The Federal Trade Commission at the same time issued complaints against both the proposed mergers, alleging unfair methods in violation of the provisions of section 5 of the Federal Trade Commission act. This resulted in the abandonment of the proposed Midvale-Republic-Inland merger. The complaint in this case consequently was dismissed. The Bethlehem-Lackawanna merger, however, has been consummated and the commission now is preparing its case for a hearing before an examiner on this matter. A similar course will be adopted by the commission, in case it issues a complaint in the Bethlehem-Midvale transaction.

The Bethlehem and Lackawanna companies, after the complaints were issued against them, filed answers denying the charges. After the testimony is taken by the examiner in this proceeding, he will make a tentative report to the Federal Trade Commission and counsel will then be at liberty to file exceptions. Arguments will follow before the commission and a decision will be given. In the event a cease and desist order is issued, the commission, if the order were not obeyed, would apply to the Circuit Court of Appeals for an order of enforcement, while the steel company could appeal to the Circuit Court of Appeals to modify or set aside such an order. The notices to stockholders and the other procedure involved in the Midvale acquisition will delay the closing of the purchase, in any event, until some time in February.

#### Proposed Merger in Central West

The latest report as to possible merging of steel companies seems to be well founded as far as two Chicago companies are concerned, but it is definitely stated by one of the interested companies that the Bethlehem Steel Corporation is not connected with the proposed merger, which will be in the nature of purchase of property. The inclusion later of a prominent steel company in the Central West east of Chicago seems probable.

#### American Manganese Mfg. Co. Receivership

The American Manganese Mfg. Co., Bullitt Building, Philadelphia, Edward E. Marshall, president, one of the largest producers of ferromanganese in the United States, having a total annual capacity of 150,000 tons, has applied for receivership in United States District Court No. 4, Philadelphia. David Halstead will probably be appointed by the Court as receiver.

The company owns two blast furnaces at Dunbar, Pa., which have been idle since the beginning of the coal strike last April. It was incorporated in Pennsylvania on Dec. 31, 1913, with capital stock of \$6,000,000 common and \$6,000,000 6 per cent cumulative preferred, and has a bonded indebtedness, according to its last report, of \$1,287,633. Among its assets is a half interest in a Semet-Solvay coke plant at Dunbar, having 110 by-product and 225 bee-hive ovens. The company also owns the capital stock of the Cuyuna-Duluth Iron Co. and the Cuyuna-Mille Lacs Iron Co. which operate iron and manganese ore mines on the Cuyuna Range, Minnesota.



# New Era in Structural Steel Industry

## American Institute of Steel Construction Planning to Create New Uses, to Establish Authoritative Design Data and to Harmonize Building Codes

**M**ORE than half the membership of the American Institute of Steel Construction, this being the new name of the National Steel Fabricators Association, was represented at the annual meeting held at the William Penn Hotel, Pittsburgh, Nov. 23, and the gathering not only was productive of the adoption of a name for the organization more definitive and comprehensive of its aims and activities than the old one, but also of a very constructive program worked out since a year ago by the board of directors and the managing director, L. H. Miller, formerly of the Cleveland district office of the Bethlehem Steel Corporation.

The organization seems to have found itself since a year ago and a marked feeling of optimism pervaded the meeting as to its future. John L. Kimbrough, Indiana Bridge Co., Muncie, Ind., president of the association, presided, and in his introductory remarks commented upon the great change in sentiment of this year's gathering in contrast with that of a year ago, when the industry was depressed and optimism was conspicuous by its absence. Mr. Miller in his remarks stressed heavily the need of standardization of building codes and handbooks of structural steel. He detailed the history of the compilation of hand books and pointed out that some of them now in use were made up 35 years ago. He also pointed out the possibility of the greater use of structural steel in residences, claiming that a 7-in. 10-lb. channel was not only cheaper by 22 per cent than 2 x 2-in. wood joists, but that the use of steel would obviate the necessity of laying two courses of brick on the exterior wall of a residence.

Mr. Miller said in part:

"The most obvious condition connected with the structural steel industry is that there has been a constantly decreasing demand for its use since the first records were started in 1912 by the Bridge Builders and Structural Society. These records indicate a total decrease in the nine years from 1912 to 1921 of about 55 per cent. Materials which have supplanted structural steel have increased about 1000 per cent in that time, due to intensive effort in exploitation. This has happened in face of the fact that there has never been produced or marketed a material for construction or any other purpose, as uniform in quality as structural steel is to-day. Inside its elastic limit it acts with a mathematical accuracy that is unknown in any other construction material. It cannot possibly be injured by stresses within its elastic limit, and this point is never approached in construction work. Medium open hearth structural steel has an elastic limit in the neighborhood of 40,000 lb. per sq. in. and a slight increase in the silicon content raises this point to about 45,000 lb. per sq. in.

### Need of Authority on Use of Structural Steel

"In spite of the extensive individual distributed knowledge regarding structural steel, there has never been established a recognized authority on its use, and until such an authority is created and given power, the numerous troubles that beset the industry can be approached only in a clandestine way. No two building codes in the country are the same, and unless there is a means soon established to co-ordinate the various movements now operating to revise these codes, it will be but a short time before we will have much greater divergence in building codes than now exists.

"The fact that there is now no recognized authority needs no extensive discussion; and the fact that it does not exist is itself sufficient to convince all of us that one should be developed. If we can accept the

necessity of an authority on structural steel, it next becomes necessary to determine where such an authority should be located. It is true that the catalogs of the various mills are the source of information regarding steel to-day but these are extensively reprints of catalogs appearing 35 years ago; and it is the extensive distribution of these catalogs or handbooks that is one of the greatest difficulties in creating a uniformly recognized authority. These books were devised to exploit the sale of the product of the various mills, whose interest in the subject is confined principally to the making and rolling of steel shapes, and not to the conditions under which they are used in construction. In fact when a mill or an engineering firm wants the services of a man qualified to design or discuss the uses of structural steel, they recruit him from the fabricating industry.

"It should be remembered that the mills do not sell their product to the public in the form in which it is rolled, but the material passes through another industry before reaching its ultimate destination. It is the fabricating industry which is the bridge between the rolling mills and the public, over which bridge all structural steel tonnage must pass. The fabricating industry is in constant contact with the engineering and architectural professions, with building commissioners and the ultimate purchasers of structural steel. It is, therefore, apparent that the authority should be located where the talent and the means of exploiting its increased use exists, which gives us a clear title.

"The most striking thing connected with the past of the steel industry is the fact that such rapid strides have been made in the metallurgical processes, in the rolling improvements, in the knowledge regarding design, in methods of fabrication, and erection, and in inspection; but against all these there was the failure to provide an authority that would permit exploiting the full economy of steel. If only one mill handbook now existed, it might be used as a basis of creating an authority, but so many make it difficult to obtain co-ordination. An effort originating among the mills to confine their data to one source would in itself be very difficult to effect, and might bring forth suspicion not only among themselves but with the public, as to the motives involved. On our part we frankly admit that we want to increase the demand for steel by bringing about conditions that permit its economical use. To make ourselves the recognized authority we must do something that will be accepted and welcomed as constructive by the mills, the engineering profession, the architects, the building commissioners and the purchasers of steel.

### Committee to Recommend Stresses and Formulas

"We are now working on the selection of a committee of the most eminent talent we can find and will ask them to recommend a proper unit stress and column formula for steel construction. Based upon their recommendations, we will publish a set of loading tables for all the sections rolled by the various mills. One of the serious objections to the present mill handbook is that it has encouraged the handbook engineer. By omitting the use of the word "safe" and stating that our tabulated loads produce the stress conditions recommended by the committee, we will make empirical handbook engineering more difficult than at present. For instance, if our committee recommends a unit stress of 20,000 lb. for beams in bending, our tables will state that the uniformly distributed load produces a stress of 20,000 lb. in the extreme fiber of the beam instead of stating as present books do, that the tables give the safe loads. Under present conditions the word

"safe" is relative and does not mean the same in different cities.

"In addition, our tables should show the maximum strength of the web to resist buckling, and also the maximum strength of the web to resist shear. These items are omitted from many tables, but are often of utmost importance in design. We will ask the mills to adopt our standards in their books. We then can go before the engineers, architects, building commissioners and the public with concrete evidence that the mills who originated our present practices have accepted our standards as authority. I have not found a single person or interest who has not expressed unqualified approval of this and there are several large cities ready to recommend our standards as their building code as soon as they are established. Our work will not end when we have established uniform code regulations, as there is yet much work to be done in bringing the matter of steel construction more prominently into the college courses. Then there is the question of fire-proofing which can be better approached when we have once been recognized as a power.

#### More Structural Steel in Residences

"Along with this is the matter of development of new fields for the use of steel, such as in residence construction. You perhaps think that this is a matter far in the future but in a few figures I will reveal that under present conditions steel is cheaper than wood. A 7-in. 10-lb. channel is stronger than two wood joists 2 x 12-in. and at present mill prices for both the steel cost is 22 per cent less, in addition to saving two brick courses on the exterior wall of a residence. Labor must be added to the cost of both elements and under present conditions labor is about 65 per cent of a residence against 35 per cent in material. These figures are obtained from a reliable architect, whose work is largely in residence construction. Properly exploited, this field offers an opportunity for greater tonnage and profit than now exists in all other fields.

"These prospective changes will enable us to exploit an increased demand for steel which in ten years should be many hundred per cent above that of last year, without considering the new sections which the mills will soon produce, enabling us to go into many new fields. It is not extravagant to state that I believe that we are to-day launching a new era in the structural steel industry, and all we need is patience and support to guarantee success.

#### Basis of Calculating Building Weights

"Another point which a leading architect has called to my attention as a subject which we could correct very promptly is that of how the calculated weight of a steel contract should be determined, *i. e.*, should the calculated weight include in addition to the weight of the main members, such items as the total weight of the rivets used, and in the case of gusset plates, should it include the weight of the corners of the plate clipped off to make a presentable appearance. What weight should be included for the first coat of shop paint, and what for the second, if specified? This architect pointed out that fabricators purchase their material based on catalog weights from the mills, and we should determine whether or not structural steel should be sold on catalog weights as purchased, or on scale weights. He pointed out that these questions were a bone of constant contention in almost every steel contract, and that the architectural profession would welcome a standard ruling from an association such as ours, which could be pointed to as the recognized authority saving them from a constant discussion on this subject. In his opinion, it is a matter of indifference to the architectural profession just what this ruling should be, but it is of utmost importance that he should establish something that they could refer to as basic.

"There is also another very important field in which our association can be of enormous value, in bringing about uniform practice in tank construction. While this industry is not carried on in all cases as a part of the fabricating industry, it so completely overlaps in many cases that we should be in a position to contribute very valuable assistance. As the industry now

stands, unit stresses vary all the way from 12,000 to 25,000 lb. per sq. in., making it impossible for the bidder to tell whether he is in competition with unit stresses or his competitor's fabricating costs. There is also a possibility that in many cases the liquid contained has a very wide range in specific gravity, making the resultant stresses dependent upon the specific gravity used by the designer. Then again, there is the question of rivet spacing and whether or not the rivets are driven hot or cold. It is a very large subject and one which we should take up in our work."

Mr. Lane, of the Bureau of the Census, Department of Commerce, addressed the meeting, telling of the efforts of the Government to secure structural awards, and the methods employed and urged that those not reporting their awards should do so. At the luncheon, W. A. Durgin, chief of the division of simplified practice, Department of Commerce, urged the necessity of co-operation between the association and the Department of Commerce.

#### Officers and Directors

William Wood, Mississippi Structural Steel Co., Decatur, Ill.; C. A. Schneider, General Iron Works, Cincinnati; A. J. Dyer, Nashville Bridge Co., Nashville, Tenn.; George E. Klingelhofer, Pittsburgh Bridge & Iron Works, Pittsburgh, and C. W. Russel, Russel Wheel & Foundry Co., Detroit, were elected directors to serve for three years, Messrs. Wood and Schneider being re-elected. The board of directors later organized by re-electing John L. Kimbrough, president, and William Wood, vice-president and treasurer.

#### Large Expenditures Planned by Michigan Public Utilities

The Michigan Committee on Public Utility Information at Ann Arbor reports that approximately \$10,000,000 will be expended by public utility corporations of Michigan for extension and expansion work now under way or planned for 1923. The rapidly mounting requirements of industries, municipalities and domestic consumers have necessitated this increase in power facilities. The Detroit Edison Co., has a program of expansion for 1923 which involves an expenditure of \$5,000,000 for service extensions, new power plants, and sub-stations. This covers the preliminary work on the huge new power unit in the lower Detroit River, near Trenton, which will duplicate the Delray and Conner's Creek plants in Detroit; completion of the first section of the power plant at Marysville, the first of which was placed in service several weeks ago and which will add 66,000 electrical hp. to the Edison company's present capacity of 418,000 hp.; electrification of Harsem's and Russell's Island and the St. Clair Flats; erection of four new sub-stations and general extension of its service in the 3400 square miles of territory in southeastern Michigan now served by the company.

#### Will Develop Electric Power in the Ohio Valley

Early start on the development of electric power facilities in the Ohio Valley, involving an initial outlay of upwards of \$10,000,000, is promised by R. P. Stevens and associates, who have just acquired control of the electric railway, power and light systems in the Mahoning and Shenango Valleys. It is the plan to build a large electric power station to supply the growing industrial requirements in the Ohio Valley and the Youngstown district.

Mr. Stevens, of New York, John T. Harrington of Youngstown, a director of the Trumbull Steel Co., Warren, and others have purchased a controlling interest in the Republic Railway & Light Co., the Pennsylvania-Ohio Electric Co. and the Pennsylvania-Ohio Power & Light Co.

Jonathan Warner, president of the Trumbull Steel Co., and W. H. Foster, president of the General Fire-proofing Co., have been elected to the board of directors of the Pennsylvania-Ohio Electric Co.



# Machine-Tool Dealers Discuss Problems

Business Prospects, Selling of Second-Hand Tools, Commissions, and Other Subjects Considered at Meeting in Pittsburgh

**M**ACHINE-TOOL dealers who are members of the machine-tool section of the National Supply and Machinery Dealers' Association met at the William Penn Hotel, Pittsburgh, on Nov. 21, for their annual meeting and considered many of the problems concerning the selling of new and used tools. The section has 136 members, of whom 32 are located west of Chicago, 17 in the New England States, 22 in the district of Illinois, Missouri, Indiana and Michigan, and 65 in the district of New York, New Jersey, Pennsylvania and Ohio.

L. H. Swind, president L. H. Swind Machinery Co., Philadelphia, chairman of the section, in his opening address said:

"At our fall meeting of last year your chairman laid particular stress on the necessity of closely drawing the lines of economy in order to promote a healthful condition in our industry and to meet the rising business tide that was surely but slowly in the making. Special mention was also made that we had to look to the railroads for the initiative in the prospective resumption of business.

"We are again gathered here to-day to discuss what the near future may hold in store and what seems best to promote the welfare of our industry, as well as that of our association. An attempt to forecast the future—when considering the existing conditions—beyond a period of a few months is quite questionable. There is a pronounced manifestation of uncertainty.

"The dealer handling new machine tools exclusively has experienced many difficulties in the marketing of his lines, owing to the large quantities of rebuilt, so-called rebuilt, used, Government owned, and surplus machine tools and those available at public sales and enforced liquidations.

"Many instances have been recorded where the dealer created a demand later satisfied by attractive prices available from the aforesaid supply. His extreme effort plus the attendant expense were for naught. Confronted with this abnormal condition, coupled with the practice of some builder in offering his own products in rebuilt form, greater intensity was directed to this branch of selling, with the result that the buyer became equally as intensive in securing this character of equipment in preference to new. From present indications it looks as if the particular branch of activity will continue for some little time.

"Let us hope for a speedy liquidation at prices within reasonable bounds, as this result would greatly assist the stabilization of the industry.

## Terms of Payment

"Reference was recently made to the selling of machine tools on a basis of long-time payment. It is suggested that our members vigorously oppose such movement and at the same time instruct their credit department to avoid the pitfalls of compromise that invariably follow any deviation from the customary terms of 30 days net as the prevailing margin is insufficient to countenance any other course that makes for additional expense channels. Attention is again called to the merit of the trade acceptance as it affords an opportunity of cost reduction attendant in slow payments and trade abuses. Experience has shown that it is carefully regarded by the acceptor and its stimulating effect in the receivables becomes apparent to the user.

## Dealers' Problems

"Are dealers' costs too high, or is his compensation inadequate? During the war period the increasing volume and attendant low cost of doing business made his road one of prosperity and comparative ease. This

is reflected in the years 1919-20—in that commercial failure—manufacturing, wholesaling and retailing—was less than any time during the preceding period of about 36 years.

"Our secretary has recently tabulated figures covering dealers' costs and the average indicates the necessity of giving this question most serious consideration. Houses dealing exclusively in machine tools are affected severely, as aside from their high costs the used market further intensifies the situation in that the necessary volume is not obtainable.

## Salesmanship

"The large surplus of used and rebuilt machines demands a higher standard of salesmanship in those having to do with the selling of the improved type of machine tools. The past two years injected the price germ into quite a large number of buyers with the result that investment values have suffered materially.

"The so-called bargains available in rebuilt and used machines might prove less attractive if they would but tabulate the subsequent cost of repairs, additions, adaptability of the purchase to their shop conditions, and last but not least, the valuable service obtainable in the purchase of new machines with the many cost reducing features embodied.

"In face of these conditions, the salesman should better prepare himself by careful study of the more recent machine tool engineering development of the respective makes handled by his firm in order to counteract the bad effect of the price germ on the industrial market."

## Co-operation With Machine-Tool Builders

Thomas A. Fernley, Philadelphia, secretary of the association, reported in part as follows:

"Your organization has closely co-operated with the National Machine Builders' Association, and it is expected that a continuation of this co-operation will be helpful in many directions in the interest of a higher standard of business methods and of better distributing conditions.

"Many of our members have, during the past year, done considerable business in rebuilt, second-hand and surplus machine tools, and while many had not previously dealt in other than new tools, it has been found desirable to develop this medium of trading as a means of absorbing the accumulation of the war period and of maintaining a good volume of business.

"Inquiry by the association concerning the cost of doing business in machine tool distribution has shown a continuing high expense despite efforts made to reduce these expenses.

"The handling of other than new goods by some of the members has been in an effort to distribute the overhead expense over a larger volume of sales and thus to meet the situation.

"The subject of what is a proper commission for machine-tool dealers has been heard of from members during the year, and it is planned to have a discussion on the subject at this time.

"One indirect feature of the work of the association which has been of decided benefit, has been that of a better handling of cases where divisions of commissions have been suggested and members have told your association that their friendly relations with other dealers have led to some satisfactory adjustment which, under previous conditions, could hardly have been reached."

Ernest F. Du Brul, general manager of the National Machine Tool Builders' Association, addressed the association. His address is reported on page 1425 of this issue.

## EXPORTS GENERALLY DULL

### Japanese Rail Purchases Still Factor — United States Leads in Supplying Japan

NEW YORK, Nov. 28.—Export business is increasingly quiet. One exporter dealing with Chinese markets and the Far East, except Japan, states that he has not handled an order from China for the past month, the total of his present business being small shipments for stocks carried in the Philippines. At present this exporter is sending to Philippine warehouses about \$125,000 worth of sheets, nails, wire, etc. Another company, however, which engages in an export and import business with China, reports fair imports of material from China into the United States and mentions a fair number of current iron and steel inquiries. A large part of the business developing, however, is evidently being placed in Germany, German sellers making a strong effort to sell into China and sometimes engaging in keen competition among themselves for

from the United States, the second largest shipper being Germany with only 3592 tons to her credit. While these figures on rail imports for the first nine months of this year show a total of 128,789 tons, it must be considered that this total does not show shipments made for the South Manchuria Railway Co., which buys c.i.f. Dairen, Manchuria, or a number of small tenders that have been placed in the United States by the Formosan Government. The figures given under "Kwantung Province," although they represent shipments from a foreign market into Japan proper, in reality represent the production of two large works, owned, operated and controlled by Japanese and Japanese capital. The 11,552 tons of pig iron shown as imported from British India is Tata iron and is interesting when compared with the total iron imports from the United States, Great Britain, China, Kwantung Province and other producing centers.

Although this table shows figures strongly favoring the United States, a Japanese exporter in New York points out that they represent only the shipments that

#### IMPORTATION INTO JAPAN

	Port of Importation September			Total for Sept.	United States	Great Britain	Germ'y	Belgium	British India	Australia	China	Kwan- tung Prov.	August Imports	Total for First 9 Months
	Kobe	Osaka	Yokohama											
Copper .....	...	...	...	...	...	...	...	...	...	...	...	...	101	19,497
Tin .....	154	2	109	265	...	...	...	...	...	...	10	...	138	1,995
Lead .....	3,187	23	1,613	4,823	973	2	...	...	1,404	2,264	26	...	494	30,533
Zinc .....	888	264	636	1,788	640	...	21	...	...	871	...	...	4,135	32,452
Pig iron .....	14,130	1,987	1,721	17,838	1,115	957	...	...	11,552	...	1,639	2,268	8,148	122,953
Plates .....	8,250	538	8,527	17,315	11,263	5,589	170	289	...	...	...	...	41,977	478,255
Rail .....	8,125	1,080	15,256	24,467	20,580	192	3,592	97	...	...	...	...	18,585	128,789
Angles .....	1,023	1,006	...	...	4,356	...	...	...	...	...	812	9	19,662	196,022
Bars .....	5,975	214	...	7,240	15,458	2,559	4,805	2,511	...	...	...	...	...	...
Nails .....	470	119	210	799	331	...	483	...	...	...	...	...	1,221	42,100
Tin plate .....	918	188	1,212	2,318	1,703	599	...	...	...	...	...	16	2,989	47,968

particularly desirable orders. This was evidenced not long ago in the bids for electrical installations in the city of Ningpo, China, totaling about \$500,000. The American bid was considerably too high, but the Allgemeine Elektrizitäts Gesellschaft and the Siemens-Schuckert Co. in Germany were strong competitors for the contract and cut their quotations to a low level. This exporter points out that on a recent inquiry for about two miles of light rails, he was able to quote a price about one-third lower than the current American domestic market, having available a tonnage of re-rolled rails. Low as the price was, it was too high to obtain the business.

#### Japanese Purchases of Rails Still Heavy

The Japanese market, as far as merchant buying is concerned, is unimproved, but purchases of rails continue on a fairly large scale. The recent tender of the Korean lines of the South Manchuria Railway Co., for 40 miles of 100-lb. rails (6285 tons), bids on which were opened Nov. 20, was awarded to the Mitsubishi Shoji Kaisha and placed with an American interest at about \$43, c.i.f. per gross ton. The Imperial Government Railways, which recently placed 5000 tons of rails in Germany, on Nov. 24 closed on another tender for 3800 tons of 75-lb. rails. In addition to this business there have been some small orders for locomotive boiler tubes placed in the United States through Japanese houses by the South Manchuria Railway Co. and other Japanese railroads.

#### American Material Strong in Japan's Imports

Despite reports that Japanese buyers are exhibiting a strong tendency to turn from the United States to Great Britain and the Continent because of the considerably lower prices obtainable in these markets, a current report of imports into Japan by countries, made up unofficially by a large Japanese import and export house, shows the balance of business for the first nine months of this year and for September, heavy on the side of the United States. The heaviest shipments in September, for example, were of rails, a total of 24,467 tons being imported through the ports of Kobe, Osaka and Yokohama, of which 20,580 tons were

have arrived in Japan and that judging by reports of recent purchasing in European markets, the statistics for the final quarter and the first month or two of 1923 may show a considerable difference in the tendency of Japan's trade.

#### Continental Iron Still Competitive

An importer of pig iron, who has been dealing almost exclusively in shipments of Scotch foundry iron reports the market for imported iron dull, because of the gradual decline of the domestic price, which has brought the American product practically to the same price level as the British product. This importer states that he recently quoted \$28 per ton, duty paid, on a tonnage of high silicon iron, the phosphorus in which was 0.60 to 1 per cent.

An interest that handles imports of European pig iron almost exclusively reports business still fair, although a large part of the present sales is for shipment to Pacific Coast consumers, where there is still a good margin of price difference between the foreign and domestic product. This interest still reports sales to foundries in the New England district, but it is worthy of note that it has been offering a limited quantity of German iron lately at \$25 per ton, c.i.f. Atlantic port. The iron analyzes from 2.25 to 3.25 per cent silicon, with the manganese and phosphorus at about 0.60 per cent. None of it has yet arrived but the first shipment has been promised for December delivery, shipment to be made in November.

#### Foreign Iron Ore Active

The foreign iron ore market is fairly active. An importer of North African iron ore reports the sale in the past two weeks of a total of 35,000 tons. The greater part of this tonnage, however, was for shipment to a Canadian interest. This seller quotes the current price at about 10½c. per unit, c.i.f. port. Sales of Caucasian manganese ore are few and the market dull. The price is unchanged at about 27c. per unit for ordinary and 29c. for unit for washed ore. An agent for the Caucasian mines has recently booked one order for 5000 tons.



## LARGE FURNACE OUTPUT

### More Valley Stacks in Operation Than for 28 Months—Slight Slackening in Sheets

YOUNGSTOWN, Nov. 28.—In the sheet division of the steel industry, operations in the Mahoning Valley show less strength and sustaining influences are lacking. Some interests have sizable gaps in their rolling schedules and are depending upon business booked from day to day to round out their operations.

Both the Republic Iron & Steel Co. and the Falcon Steel Co. are operating their sheet mill departments this week on a 50 per cent basis. Of the 109 units in the Mahoning Valley, 92 were scheduled Monday. Bar mill production also shows moderation, and the Republic company has one less unit active this week than last.

Blast furnace production, on the other hand, is at the highest point in the past 28 months, with 32 of 47 stacks in the Mahoning and Shenango Valleys pouring. During the past week, No. 1 blast furnace in the Ohio Works group at Youngstown of the Carnegie Steel Co. resumed. All of the six stacks in this complement are now active.

Strip, skelp, pipe and tinplate production continues with little diminution. Of the 17 tube mills in the Mahoning Valley, operated by the Youngstown Sheet & Tube Co. and the Republic company, 16 are rolling.

There are two less open hearth furnaces charged this week than last in the Mahoning Valley, the independents melting from 42, as compared with 44 the previous week. All four Bessemer converters in the district are blowing.

Properties of subsidiaries of the United States Steel Corporation, in the two Valleys are maintaining a high production rate, with exception of the Farrell, Pa., Works of the American Steel & Wire Co., which is scheduled to go down Wednesday evening for inventory. The Youngstown, New Castle and Farrell properties of the Carnegie Steel Co. are operating at normal, as are the plants of the American Sheet & Tin Plate Co. at Mercer, Shenango, Farrell and New Castle. At the Farrell plant, only two of 30 tin mills were idle during the forepart of the week.

Despite the seasonal slackening in demand for reinforcing materials and steel building construction products, district fabricators are maintaining their plants at a good rate. The Truscon Steel Co., for instance, is operating at about 90 per cent and the General Fireproofing Co. at 85 per cent.

Railroad and tank car builders are busy and in some cases are increasing their forces. More adequate labor supply has enabled the A. M. Byers Co., Pittsburgh, to enlarge the operations at its Girard plant. This week it has 76 of 88 puddle furnaces fired.

### Michigan Steel Corporation Buys Site for Plant

DETROIT, Nov. 27.—George R. Fink, president Michigan Steel Corporation, First National Bank Bldg., has announced that the new company has secured an attractive site of 35 acres on the Ecorse River in the western industrial section of the city. Plans have been completed for the erection of a six mill sheet plant with an approximate production of 3000 tons monthly to start with and 400 employees.

Contracts were placed this week for the structural steel for the buildings and every effort will be made to have them completed within four months, with the idea of having the plant in operation by the middle of next summer. Other contracts have been let for cranes and electrical equipment and within the next week contracts covering the rolling mill equipment will be placed.

The officers of the company are: Frederick B. Lovejoy, Wheelock, Lovejoy & Co., New York, chairman of the board; George R. Fink, formerly with the West Penn Steel Co., Brackenridge, Pa., president and treasurer; Frank H. Jones, Worthington Pump & Machinery Co., New York, vice-president; Herbert M. Steele, formerly with the Newton Steel Co., Newton Falls, Ohio, vice-president.

## VALLEY SHEET MARKET

### Price Announcement Does Not Develop Large Volume of Orders

YOUNGSTOWN, Nov. 28.—Independent interests are booking sheet and tinplate tonnages for first quarter delivery, next year, on the same basis as the quotations of the leading interest, namely 2.50c for blue annealed sheets, 3.35c for black and 4.35c for galvanized, all base gages, and \$4.75 for tinplate. Maintenance of the sheet prices was generally expected, but it was hoped in independent tinplate circles that the next quarter price would be marked up to at least \$5. Doubt had been expressed in some quarters, though, whether the volume of business was such as to warrant such an increase.

Independents point out that the tinplate price just recently announced is to apply, according to present calculations, only to the first three months of next year. Ordinarily it is the custom in this branch of the industry to enter into contracts for six months ahead. What price will apply after the first quarter of next year is of course largely a matter of speculation.

Independent tin plate makers have considerable business on their books accepted as low as \$4.60, and they have been contending that costs justified an advance. While they are less heavily obligated than the leading interest, nevertheless their position with respect to unfilled tonnage is comfortable, and new business is coming through in a satisfactory way.

In the common grades of sheets, much is to be desired, insofar as makers are concerned. Demand has tapered the past two weeks, attributed in part to price unsettlements and to the approaching inventory period. Announcement of next quarter prices failed to bring to the mills the volume of business which had been hoped for. Some makers have already reduced their production.

Non-integrated sheet and tinplate rollers are of course much interested in the sheet bar price which is to apply for next quarter. Sheet bars are selling down to \$37, and makers compelled to buy such raw material contend that current finished steel prices do not warrant a sheet bar quotation above \$35. It is expected in some quarters that the price for next quarter will sag to this figure, which compares with a \$40 quotation earlier in the fourth quarter of this year.

### Reed-Prentice Co. Concentrating Work

The Reed-Prentice Co., Worcester, Mass., is proceeding rapidly in concentrating the business of the Becker Milling Machine Co. of Hyde Park and the Whitcomb-Blaisdell Machine Tool Co., in the company's shops, known respectively as the Reed and Prentice plants, from their former owners, the F. E. Reed Co. and the Prentice Bros. Co. Such machinery of the Becker plant as was considered desirable in rounding out the equipment has been shipped to Worcester and together with some of the tools from the Whitcomb-Blaisdell shops, has been set up. The remainder of the equipment of the plants now abandoned will be sold, together with the real estate, for the benefit of the shareholders of the Becker company, the purchase by the Reed-Prentice Co. not including these.

A score or more of Becker employees have moved to Worcester to enter into the new service. They include Scott F. Taylor, superintendent, who has been made superintendent of the Reed plant; A. S. Morse, who will have charge of sales for the small tool department; L. D. Farmer, mechanical engineer; Charles Brown, production engineer, and L. S. Cook, correspondence clerk.

The Worcester business is being reorganized, so that the Reed plant will be devoted to the manufacture of small tools and the smaller machine parts, while the Prentice works will do the setting up and the manufacture of heavy parts.

The Becker line of milling machines will be simplified by the elimination of certain types, and so will the line of the Whitcomb-Blaisdell Co., in its lathes and planers. The elimination will extend through the Reed-Prentice types.

# Iron and Steel Markets

## HIGH MILL OPERATIONS

### Working Out of Fuel and Railroad Hamperings

#### Price Situation on Heavy Products Not Yet Fully Developed for Early 1923

The high rate of steel works and rolling mill operations has kept up for another week and the industry is exceeding the predictions of early October in the rate at which it is working up accumulated orders.

The formal naming of previous prices on sheets and tin plates as the Steel Corporation's basis for the first half of 1923, while a disappointment to some independent producers, is taken by buyers in these and other lines to be predicated on a fair balance between supply and demand in the months just ahead, with production well above the 1922 average.

Of immediate moment is the basis on which steel companies not so well booked ahead as the Steel Corporation will take business as a backlog for 1923 operations. Some of these companies have booked sparingly of material for steel cars, on which there have been concessions, and it is yet to be seen whether enough business will develop in other lines to give them a satisfactory operation.

There is no great variation in current prices for plates, shapes and bars, but just enough to make consumers cautious until the situation is more fully developed as to first-quarter business.

Wire and tubular products show more firmness than other lines. In the former the leading producer has not been able to exceed a 60 per cent operation. In plates, shapes and bars \$1 per ton below the 2c. level and in some cases \$2, is reported, but the fixing of the contract basis for the first quarter of 1923 is still in abeyance.

Poor performance by the Pennsylvania Railroad at Pittsburgh is still a factor, but generally shipments in that district are equal to production, and some mills have moved a part of their accumulated product. The subsidence of recent unfounded reports of impending wage increases accompanies an easier situation as to common labor supply.

In connection with the announcement of the \$4.75 price for tin plate, plans of buyers indicate a continuance of the heavy consumption by canning companies, with indications that on the Pacific Coast there will be an increase in 1923.

While \$38 has been considered the sheet bar market price, \$37 at Central Western steel works has been named. Some sheet mills which buy their bars are limiting their sales to this year.

Oil storage tanks account for about one-half of the fabricated steel awards of 25,000 tons for the week and new work calls for 12,000 tons. At Toledo, Ohio, a shipyard has taken a lake boat requiring 3000 tons of plates.

Besides 9000 more freight cars bought at Chicago, new inquiries have appeared for 1250 cars.

Buyers of pig iron are showing much more in-

terest in the market, but there still is hesitancy about placing orders, especially for delivery after Jan. 1. Marked weakness continues. In the Buffalo district, quotations are very low, especially on higher silicon irons. The aggressive attitude of Buffalo furnaces has been felt in other sections, where in competitive business prices have been marked down sharply. At Chicago the decline is from \$1 to \$2 and in eastern Pennsylvania \$1, while in Pittsburgh prices on foundry and Bessemer grades have receded 50c. and on basic \$1. In the South, with the market at \$23, resale iron is going at \$22.

The shrinkage in export business is more pronounced. The recent Korean order for 6300 tons came to the United States at a delivered price of \$43, which is the present mill price on domestic business. The contracts for 3800 and 5000 tons for the Imperial Government Railways of Japan, taken by Germany, went at \$34 to \$35, c.i.f. Japan.

England is credited with getting a Standard Oil contract for 150,000 boxes of tin plate at the equivalent of \$4.25 per box, though it is indicated that the United States could have had the order at \$4.50.

San Juan, Porto Rico, is about to buy 20,000 tons of 30-in. cast iron water pipe. Bids will be opened Dec. 1.

A slight drop, the first in four weeks, brings THE IRON AGE composite price for finished steel to 2.439c. per lb., putting it on the plane reached at the end of September, in the rise due to the coal and railroad strikes. Early in March the figure was just under 2c.

For the ninth successive week the pig iron composite price has fallen, and is now \$26.77, compared with \$27.61 last week and with \$32.54 at the end of September. In July, just before the recent rise, the figure stood at \$23.61, while last February, at \$18.02, it registered the lowest point since the fall of 1916.

## Pittsburgh

### Some Light on Steel Prices—Pig Iron Quotations Decline

PITTSBURGH, Nov. 28.—The steel prices situation has been only partially clarified by the announcement of the American Sheet & Tin Plate Co. as of last Thursday, continuing the present prices for the first half of 1923. Independent plate makers plainly are disappointed that an advance of at least \$5 per ton was not made by the leading interest. Ultimately, however, it is believed they will fall in line with the Steel Corporation price, since failure to do so would put their customers at disadvantage with those served by the Corporation. There is a possibility that Corporation sheet prices will not long remain as minimums, since it is well established that independent producers, lacking sizable order books, may find it necessary to cut to secure rolling schedules. Indeed it is reported that a northern Ohio independent already is seeking business at 3.25c. base for black sheets. The Steel Corporation has not yet definitely committed itself as to its first quarter prices on the heavy tonnage products and the uncertainty as to prices for that period makes buyers extremely cautious and prices on current busi-



## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Nov. 28, 1922	Nov. 21, 1922	Oct. 31, 1922	Nov. 29, 1921
No. 2X, Philadelphia...	\$29.14	\$30.14	\$31.14	\$22.34
No. 2, Valley furnace...	27.00	27.50	30.00	20.50
No. 2, Southern, Cin'tit...	27.05	27.05	29.05	22.50
No. 2, Birmingham, Ala...	23.00	23.00	25.00	18.00
No. 2 foundry, Chicago...	29.00	30.00	31.00	20.00
Basic, del'd, eastern Pa...	27.50	27.50	28.50	21.00
Basic, Valley furnace...	26.50	27.50	30.00	19.00
Valley Bessemer, del. P'gh.	32.77	33.27	34.77	21.96
Malleable, Chicago*	29.00	30.00	31.00	20.00
Malleable, Valley...	28.00	29.00	32.00	20.00
Gray forge, Pittsburgh...	28.27	28.77	31.27	21.46
L. S. charcoal, Chicago...	36.15	36.15	36.15	31.50
Ferromanganese, furnace...	100.00	100.00	100.00	60.00

Rails, Billets, etc., Per Gross Ton:	Nov. 28, 1922	Nov. 21, 1922	Oct. 31, 1922	Nov. 29, 1921
O.-h. rails, heavy, at mill.	\$43.00	\$43.00	\$43.00	\$40.00
Bess. billets, Pittsburgh...	37.00	38.00	40.00	29.00
O.-h. billets, Pittsburgh...	37.00	38.00	40.00	29.00
O.-h. sheet bars, P'gh...	37.00	38.00	39.00	30.00
Forging billets, base, P'gh	45.00	45.00	45.00	32.00
O.-h. billets, Phila...	43.17	43.17	45.17	34.74
Wire rods, Pittsburgh...	45.00	45.00	45.00	40.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb...	2.00	2.00	2.00	1.50
Light rails at mill...	2.00	2.00	2.00	1.55

Finished Iron and Steel,	Nov. 28, 1922	Nov. 21, 1922	Oct. 31, 1922	Nov. 29, 1921
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.275	2.275	2.325	1.95
Iron bars, Chicago...	2.50	2.50	2.50	1.65
Steel bars, Pittsburgh...	2.00	2.00	2.00	1.50
Steel bars, Chicago...	2.10	2.10	2.10	1.60
Steel bars, New York...	2.34	2.34	2.34	1.80
Tank plates, Pittsburgh...	1.95	2.00	2.00	1.50
Tank plates, Chicago...	2.30	2.30	2.30	1.60
Tank plates, New York...	2.34	2.34	2.34	1.88
Beams, Pittsburgh...	2.00	2.00	2.00	1.50
Beams, Chicago...	2.20	2.20	2.20	1.60
Beams, New York...	2.34	2.34	2.34	1.88
Steel hoops, Pittsburgh...	2.75	2.75	2.90	2.00

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire,	Nov. 28, 1922	Nov. 21, 1922	Oct. 31, 1922	Nov. 29, 1921
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.35	3.35	3.35	3.00
Sheets, galv., No. 28, P'gh	4.35	4.35	4.50	4.00
Sheets, blue an't'd, 9 & 10	2.50	2.50	2.60	2.25
Wire nails, Pittsburgh...	2.70	2.70	2.70	2.75
Plain wire, Pittsburgh...	2.45	2.45	2.45	2.50
Barbed wire, galv., P'gh.	3.35	3.35	3.35	3.40
Tin plate, 100-lb. box, P'gh	\$4.75	\$4.75	\$4.75	\$4.75

Old Material, Per Gross Ton:	Nov. 28, 1922	Nov. 21, 1922	Oct. 31, 1922	Nov. 29, 1921
Carwheels, Chicago...	\$24.00	\$24.50	\$25.50	\$16.50
Carwheels, Philadelphia...	20.00	20.00	21.00	17.00
Heavy steel scrap, P'gh...	20.50	20.50	21.00	14.00
Heavy steel scrap, Phila...	16.00	16.00	17.00	11.50
Heavy steel scrap, Ch'go...	17.00	17.00	18.00	12.00
No. 1 cast, Pittsburgh...	22.50	23.00	24.00	16.50
No. 1 cast, Philadelphia...	20.00	20.00	22.00	17.50
No. 1 cast, Ch'go (net ton)	19.50	20.50	20.50	13.00
No. 1 RR wrot, Phila...	19.00	19.00	21.00	15.50
No. 1 RR wrot, Ch'go (net)	15.25	15.50	17.00	11.50

Coke, Connellsville,	Nov. 28, 1922	Nov. 21, 1922	Oct. 31, 1922	Nov. 29, 1921
Per Net Ton at Oven:				
Furnace coke, prompt...	\$7.00	\$7.25	\$7.50	\$2.75
Foundry coke, prompt...	8.00	8.00	10.00	4.00

Metals,	Nov. 28, 1922	Nov. 21, 1922	Oct. 31, 1922	Nov. 29, 1921
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	14.12½	14.12½	14.12½	13.50
Electrolytic copper, refinery	13.62½	13.62½	13.62½	13.37½
Zinc, St. Louis...	7.02½	7.20	7.10	4.65
Zinc, New York...	7.37½	7.55	7.45	5.15
Lead, St. Louis...	6.95	6.90	6.50	4.35
Lead, New York...	7.30	7.25	6.80	4.70
Tin (Straits), New York...	36.37½	36.50	37.00	29.87½
Antimony (Asiatic), N. Y.	6.50	6.50	6.70	4.50

### Composite Price, Nov. 28, 1922, Finished Steel, 2.439c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets	Nov. 21, 1922, 2.446c. Oct. 31, 1922, 2.446c. Nov. 29, 1921, 2.135c. 10-year pre-war average, 1.689c.
These products constitute 83 per cent of the United States output of finished steel	

### Composite Price, Nov. 28, 1922, Pig Iron, \$26.77 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham	Nov. 21, 1922, \$27.61 Oct. 31, 1922, 29.52 Nov. 29, 1921, 19.56 10-year pre-war average, 19.72
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ness are irregular. Although the common quotation on plates, shapes and bars is 2c., it is admitted that business has been lost at this figure. Sales of hot-rolled flats, more especially in the heavy gages, still are being made at 2.75c. base, or \$3 a ton below the established quotation, and the market is not as firm as it was recently on several of the war products. Recent top prices on rivets have disappeared and concessions are appearing in spikes and track bolts. As a matter of fact, among the finished products real strength is apparent only in wire products and tubular goods. Demand for the former is so heavy that it would occasion no great surprise if an advance were made before long, the claim being made that at present levels they are out of line with other finished products.

The decline in pig iron prices still is unchecked in spite of the fact that merchant producers assert that on the basis of costs the market should be higher. We note a further decline of 50c. a ton in foundry and Bessemer iron and of \$1 a ton in basic iron.

Semi-finished steel is softer in price in keeping with the weakness in pig iron, and the fact that the tendency of scrap prices is lower. The common quotation on billets, sheet bars and slabs is \$38, Pittsburgh or Youngstown, but sheet bars have been offered at \$37, and sales are reported to have taken place at

even less than that. The price idea of most sheet makers for first quarter contracts is about \$35.

Fuel prices are no more than steady. In spite of rather poor performance on the part of the Pennsylvania Railroad, steel shipments are at least equal to production and we note no appreciable decline in plant operations in this and nearby districts.

Subsidence of talk of a wage increase rather suggests that the labor situation is somewhat easier than it has been. The Carnegie Steel Co. and the Cambria Steel Co. each has put on a furnace in the past week, and these with the resumption by the Reliance Coke & Furnace Co., Sharpsville, Pa., and the McKinney Steel Co., Scottsdale, Pa., bring the number of active furnaces to 94 out of 139.

Pig Iron.—Still lower prices have been noted in the past week on all grades, and since the decline has been established on comparatively small sales there is a possibility that two or three good sized pending tonnage may produce even lower figures. In some directions there is some resistance to the downward tendency of prices, but evidently these interests have not succeeded in stemming the tide. We note sales of foundry iron amounting to 2000 tons to one Pittsburgh district consumer for December delivery at \$27, Valley furnace, for No. 2 grade, a decline of 50c. per ton

as compared with last week's price, and on small tonnages producers lately do not seem to have been able to obtain more. We note a sale of 1000 tons of standard basic to a Valley interest at \$27, but quite as much tonnage has been moved at \$26.50, making the market quotable at \$26.50 to \$27. It is doubtful whether the latter price now could be obtained since buyers have fixed \$26 as their buying price limit. Valley Bessemer iron is held at \$31 by the one producer in the Valley district having any tonnage for sale, but this price is altogether untested and will probably work into a more proper alignment with basic grade when there is an inquiry of any considerable size. Bessemer has been sold at \$29, Johnstown, and since the freight rate into Pittsburgh is the same from Johnstown as from the Valley, it is hard to see how Valley iron can long command such a premium.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.77 per gross ton:

Basic .....	\$26.50 to \$27.00
Bessemer .....	31.00
Gray forge .....	26.50 to 27.00
No. 2 foundry .....	27.00 to 27.50
No. 3 foundry .....	26.50 to 27.00
Malleable .....	28.00
Low phosphorus, copper free....	37.00 to 37.50

**Ferroalloys.**—Sales of ferromanganese in this district in the past week or ten days, including a couple of round tonnages, have amounted to close to 4000 tons, all at \$100 seaboard, for 80 per cent, or \$104.79 delivered, Pittsburgh. The business includes about 1000 tons of British material brought in by a domestic producer. Talk of higher prices does not impress local consumers, who believe that sellers, notably of imported material, are running out of orders and are talking advances with an idea of stimulating buying. Little activity is observed in other ferroalloys. Domestic producers are quoting 50 per cent ferrosilicon at \$80 to \$85 delivered, but we note no sales at these prices in this district. Spiegeleisen is dull with quoted prices unchanged, but likely to be shaded on attractive inquiries.

We quote 80 per cent ferromanganese at \$100, furnace, or \$104.79 delivered Pittsburgh district for either domestic or British, and 76 to 80 per cent German at \$67 c.i.f. Atlantic seaboard. Average 20 per cent spiegeleisen, \$38, furnace; 16 to 19 per cent, \$37 or domestic; 20 per cent foreign, \$37 f.o.b. Atlantic seaboard, duty paid; 50 per cent ferrosilicon, domestic, \$80 to \$85, delivered. Bessemer ferrosilicon is quoted f.o.b. Jackson and New Straitsville, Ohio, furnaces as follows: 10 per cent, \$46.50; 11 per cent, \$49.80; 12 per cent, \$53.10; 13 per cent, \$57.10; 14 per cent, \$60.10; silvery iron, 6 per cent, \$35; 7 per cent, \$36; 8 per cent, \$37.50; 9 per cent, \$39.50; 10 per cent, \$41.50; 11 per cent, \$44.80; 12 per cent, \$48.10. The present freight rate from Jackson and New Straitsville into the Pittsburgh district is \$3.66 per gross ton.

**Steel Skelp.**—The quoted price still is 2c. for either grooved or sheared pipe skelp, but demand is moderate and the market is not free of the influence of a weaker tendency in plate prices. The bulk of the current movement is on contracts at less than to-day's price.

**Wire Products.**—Makers in this district are not able to increase production materially, because of a continued shortage of labor, notably wire drawers, and the supply situation with distributors and manufacturing consumers still is tight. Demand is brisk and the problem of the mills is in supplying it. Nails are particularly wanted, but other lines are only slightly less active. An easier price situation can come only through a lighter demand or an increase in production. Prices are given on page 1463.

**Iron and Steel Pipe.**—Makers of steel pipe report no let-up in the demand for standard pipe and that interest in oil country and line pipe is expanding, with a number of sales of the latter running in some cases up to 40 miles, being noted. Manufacturers say that car supplies are slightly better, due to the release of a good many open top cars, hitherto devoted to the lake coal trade, but that as yet they are not able to ship much more than current production. Distributors and consumers of standard pipe still are far short of their requirements and it is said that oil country jobbers are going along with light stocks. Makers of wrought iron pipe still have fairly heavy obligations, but can make

earlier deliveries on standard pipe than those making steel pipe. There is no suggestion of any immediate change in prices. Discounts are given on page 1463.

**Wire Rods.**—Quotation of \$50 against a few small inquiries by a local maker has not brought the orders and it is doubtful if that price can be done on ordinary soft rods. Sales at \$50 are believed to refer to screw stock rods and, applying the usual extra of \$5 for that grade, would work back to \$45 for ordinary rods. We regard the market as firm, but not quotably changed from the recent range of \$45 to \$47.50 for No. 5 soft rods.

We quote No. 5 common basic or Bessemer rods to domestic consumers, \$45 to \$47.50; chain rods, \$45 to \$47.50; screw stock rods, \$50 to \$52.50; rivet and bolt rods and other rods of that character, \$45 to \$47.50; high carbon rods, \$52 to \$57.50, depending on carbon, per gross ton, f.o.b. Pittsburgh or Youngstown.

**Billets, Sheet Bars and Slabs.**—The market on these forms is not quotable above \$38, Pittsburgh, or Youngstown, and there are definite offers of as low as \$37. Demand is slow and nonintegrated sheet and tin plate manufacturers assert they can not pay \$38 and get out profitably at the present prices of the finished materials. This, in particular, is the case with tin plate producers. It is believed that the Steel Corporation sheet bar price for first quarter will not be above \$35, in view of the fact that its sheet and tin plate making subsidiary is naming current prices on first quarter sheet orders and first quarter and first half tin plate business. There are occasional sales of forging steel up to \$50, but the more common figure is \$45, and observance of the usual differential of \$5 above soft billets would produce a price of \$43.

We quote 4 x 4-in. soft Bessemer and open-hearth billets, \$37 to \$38; 2 x 2-in. billets, \$37 to \$38; Bessemer sheet bars, \$37 to \$38; open-hearth sheet bars, \$37 to \$38; slabs, \$37 to \$38; forging billets, ordinary carbons, \$43 to \$45, all f.o.b. Pittsburgh or Youngstown mills.

**Sheets.**—Announcement by the American Sheet & Tin Plate Co., last Thursday continuing its present bases of 3.35c. for black, 4.35c. for galvanized, 4.70c. for No. 22 gage automobile body stock, 2.50c. for blue annealed and 3.35c. for tin mill black sheets, for first half of 1923 business, was about in line with expectations, since independent prices had receded to those levels previously except for automobile body stock. Independents still are at 5c. base, for automobile body sheets, but otherwise they have gone along with the Corporation prices for first quarter of 1923 deliveries. But there is considerable doubt, since few of them have very sizable order books, that they will be able to accumulate them except by shading prices. It should be helpful to independent business that the Corporation sheet-making subsidiary has little tonnage available for delivery before the middle of next March on new orders, having bookings, which it figures will engage capacity at least over the first two months of 1923. Mill operations remain high, averaging more than 80 per cent for the entire industry, including the leading interest which has more capacity on to-day than before in several weeks. Prices are given on page 1463.

**Tin Plate.**—Much disappointment is noted among independent tin plate manufacturers over the action of the American Sheet & Tin Plate Co., in coming out last Thursday with a price of \$4.75 per base box, Pittsburgh, for the first quarter to jobbers and for the first half to manufacturers. They had expected a price of at least \$5 and while they probably will adopt the Steel Corporation price, they are slow to announce acceptance. It is believed that the Corporation took cognizance of the lower fuel and pig iron prices, forecasting lower steel prices, in deciding to continue the present quotation. It also is thought to have been influenced by a desire to establish the market at a price that would be maintained. When \$4.75 per base box was announced a year ago, hardly 48 hours had elapsed before there were price concessions and before the decline was checked the price receded to \$4.35 per base box.

**Cold-Finished Steel Bars and Shafting.**—Specifications are coming along well against contracts but brand new orders with most makers are of moderate propor-



tions. It is reported, however, that a couple of orders of considerable size are under negotiation at Detroit. Makers generally are holding firmly to 2.50c. base Pittsburgh for carloads, and some are talking advances for first quarter business on the ground that the present price is based upon hot-rolled bars averaging about 1.75c. base, and it is not believed that the first quarter price on hot-rolled bars will be below 1.90c. Ground shafting is unchanged at 2.90c. base, f.o.b. mill for carloads.

**Steel Rails.**—Occasional sales of light rails are reported at 2.15c., base, but the tonnages moving at that figure are rather small, because these rails rolled from new steel are available as low as 2c. and the higher figure applies usually on shipments out of stock. Light sections rolled from old rails are held at 2c., base, mill, but there is considerable waving of extras, which results in a lower price than when the extras are insisted upon. The extras on light rails are 4½c. per 100 lb. for 16 to 20-lb. sections and 9c. per 100 lb. ton on 12-lb. sections for carloads; for less than carloads, 25 tons, down to five tons, 15c. per 100 lb. extra, for five tons or less 25c. per 100 lb. extra; all dead lengths 4½c. per 100 lb. extra; cut to length, shorter than 20 ft. down to 12 ft., 9c. per 100 lb. extra, 12 ft. and under 22½c. per 100 lb. extra.

We quote 25 to 45-lb. sections, rolled from new steel, 2c. to 2.15c. base; rolled from old rails, 1.90c. to 2c. base; standard rails, \$43 per gross ton mill for Bessemer and open-hearth sections.

**Hot-Rolled Flats.**—It is the claim of makers of strips here that 2.75c. is the base on only a small part of the current bookings for either prompt or first quarter delivery, and that this price refers more to heavy gage bands and not on the lighter material. Strips, however, are subject to competition from bands and annealed sheets in some districts and this competition has resulted in sales of strips in affected districts at 2.75c. Prices are given on page 1463.

**Cold-Rolled Strips.**—No important deviations from the established base of 4.50c., Pittsburgh, are observed. Business is reported to be good.

**Bolts and Nuts.**—Demand is seasonably light and while the railroads are specifying fairly well, the approach of inventory time is causing some buyers to reduce or suspend shipping instructions. The steel supply situation is easier with most makers, and as current quotations are being based on higher prices than the material now coming from the mills, there is some uncertainty about the maintenance of quoted prices. Discounts are given on page 1463.

**Rivets.**—Recent prices of \$3.15 base for large structural and ship rivets, \$3.25 for large boiler rivets and 65 per cent off list for small rivets have disappeared. No considerable business was done at these prices. Discounts are given on page 1463.

**Iron and Steel Bars.**—Efforts to line up first quarter tonnages of steel bars at 2c. base, Pittsburgh, have not met with much success so far, because buyers are unconvinced they will not do better by waiting. The present Steel Corporation price is 2c., and it is believed it would name that as the first quarter price if satisfied that it would be observed by the independents. On the other hand, there are reports that the Steel Corporation is negotiating with makers of cold-finished steel bars and other large users at 1.90c. base, and independents advance that as a reason why business as 2c. is not better. On current business, which is of moderate proportions, 2c. is the going price, but orders also have been lost at that price, presumably to mills giving away part of their freight advantage. Local makers of iron bars still are holding at 2.60c. base for refined iron.

We quote steel bars rolled from billets at 2c.; reinforcing bars, rolled from billets, 2c. base; rail steel reinforcing bars, 1.90c. to 2c.; refined iron bars, 2.60c. in carloads, f.o.b. mill, Pittsburgh.

**Structural Material.**—Shipments against old contracts are sufficient to meet the current needs of fabricating shops and new business is light. Few big structural projects are up and there is also a claim that business cannot be obtained at prices based on 2c. for plain material. Such structural awards as are being

let are on those which will go ahead immediately and the shops which can promise the best delivery are getting the business. Plain material prices are given on page 1463.

**Plates.**—The market is exceedingly dull and competition for orders is so much sharper than in other products that 2c., Pittsburgh, is becoming merely an asking price. Mills outside Pittsburgh have sold at 1.95c., Pittsburgh and some have taken orders at a price equivalent to 1.90c., Pittsburgh. Prices are given on page 1463.

**Coke and Coal.**—Supply of furnace coke is running along pretty even with demand and we note no material change in prices. As one good sized tonnage of spot coke has been sold at \$7 per net ton at oven, and \$7.50 continues to be done, the range is \$7 to \$7.50 as against \$7.25 to \$7.50 last week. Connellsville operators are talking \$7.75 to \$8 for December contracts, but buyers are not interested at above \$7.50. Foundry grades hold generally at \$8 to \$8.50, but there has been some business as low as \$7.75, with \$8 the prevailing figure. The coal market is dull and easy with mine run steam coal quotable from \$2.50 to \$3.25 net ton at mines, and mine run by-product and gas coal from \$3 to \$4.

**Boiler Tubes.**—Leading makers of steel tubes have obligations that will keep them busy over the next three months and are not promising delivery before February on new orders. On iron tubes, mill commitments also are large and early deliveries hard to obtain. Prices are very firm. Discounts are given on page 1463.

**Track Fastenings.**—Prices are sustained chiefly by reason of the fact that producers have fairly full order books, and are not very anxious at the minute for additional business. Current demands are moderate. Prices are given on page 1463.

**Old Material.**—The trend of prices in this market is downward due to the fact that other steel-making centers competing with this market for supplies are pretty well filled up, and this is about the only outlet for current offerings. One of the Corporation subsidiaries late last week bought 10,000 tons of heavy melting steel at \$21.50 and there was a sale of 5000 tons to a Pittsburgh district independent at \$21. Both of these buyers since have withdrawn from the market and with other melters in the district not buying, it is doubtful if \$21 now could be obtained. We regard the market on heavy melting grades as still quotable at \$20.50 to \$21. Railroad melting steel is weaker by 50c. per ton and on turnings and the blast furnace grades dealers have had to take substantial cuts in order to make sales. The Baltimore & Ohio Railroad will receive bids until noon Dec. 4, on 21 carloads and 15,025 gross tons of scrap, also on 3000 lb. of high speed steel scrap.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel.....	\$20.50 to \$21.00
No. 1 cast, cupola size.....	22.50 to 23.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va.; and Franklin, Pa.....	21.50 to 22.00
Compressed sheet steel.....	19.50 to 20.00
Bundled sheet sides and ends....	17.50 to 18.00
Railroad knuckles and couplers.....	22.00 to 22.50
Railroad coil and leaf springs.....	22.00 to 22.50
Low phosphorus standard bloom and billet ends.....	24.00 to 25.00
Low phosphorus, plates and other grades .....	23.00 to 24.00
Railroad malleable .....	21.00 to 21.50
Iron car axles.....	28.00 to 29.00
Locomotive axles, steel.....	23.00 to 24.00
Steel car axles.....	22.50 to 23.00
Cast iron wheels.....	23.00 to 23.50
Rolled steel wheels.....	22.00 to 22.50
Machine shop turnings.....	16.00 to 16.50
Heavy steel axle turnings.....	17.50 to 18.00
Short shoveling turnings.....	17.50 to 18.00
Cast iron borings.....	17.50 to 18.00
Heavy breakable cast.....	19.00 to 19.50
Stove plate .....	17.00 to 17.50
Sheet bar crop ends.....	24.00 to 24.50
No. 1 railroad wrought.....	20.00 to 20.50

## Chicago

### Railroad Car Orders Call for 90,000 Tons of Steel— Pig Iron Prices Decline

CHICAGO, Nov. 28.—Owing to the heavy tonnage business which continues to come to local mills, the seasonal slackening in buying which generally precedes inventory taking is not being felt. Orders placed by the St. Paul, the Northern Pacific and the Pere Marquette total 9000 cars which will call for approximately 90,000 tons of plates, shapes and bars. Contracts for 40 tanks awarded by the Standard Oil Co. involve 12,000 tons of plates. Considerable additional tank business is pending and car building is expected to continue in view of the inadequacy of the present equipment on the rails. Although locally the scarcity of open top cars is no longer so acute, the shortage of box cars for grain loading is pronounced throughout the West. Building is abnormally active for this season, as indicated by current fabricating awards and inquiries and especially by an unprecedented demand for reinforcing bars. The buoyancy of the automobile industry is also a matter of comment.

Increased mill operations have resulted in heavier shipments to users, although some manufacturers of shafting, bolts, nuts and rivets are still dissatisfied with deliveries, and purchasers of semi-finished steel complain that they cannot get all the material they need.

Steel prices are unchanged, but some buyers regard the failure of quotations to be advanced for first quarter as an indication that the tide has turned and that the advantage in the market will no longer be with the seller. This view, however, does not seem to be verified by the local mill situation. Chicago producers have large commitments in rails and track supplies for delivery during the first half of 1923 and a heavy tonnage in plates, shapes and bars ordered by car builders will overlap into first quarter. There is also a large tonnage from miscellaneous customers booked for indefinite shipment which will be carried over into next year.

What has been said of steel does not apply to pig iron. Merchant furnaces have booked very little for first quarter and prices of both Northern and Southern iron are weak.

Local mill operations are unchanged, but inability to accumulate adequate coal reserves is still cause for concern. Merchant blast furnaces appear to be better fortified as to fuel than the steel works furnaces.

**Ferroalloys.**—Sales of 250 tons of spiegeleisen have been made at \$46.05 delivered. Ferromanganese is quiet and the general quotation is \$100 seaboard.

We quote 80 per cent ferromanganese, \$107.56, delivered; 50 per cent ferrosilicon, \$80 to \$85, nominal, delivered; spiegeleisen, 18 to 22 per cent, \$46.05 to \$47.05, delivered.

**Pig Iron.**—Prices continue to weaken, and while the level of the market is not clearly defined, local iron for prompt shipment appears to command \$29, base, furnace. The few purchases which have been made for forward delivery indicate that lower prices are being made on first quarter iron. A price of \$28 dollars base Chicago furnace would seem to represent the first quarter market; in fact, even this figure has been shaded in a few instances. Southern iron also is soft and recent sales have been made in this territory at \$22, base, Birmingham. Some of this material, if not all, was resale iron. Recent first quarter purchases include 200 tons of Northern and 200 tons of Southern foundry bought by a Wisconsin company, 1000 tons of Southern ordered by a Belvidere, Ill., manufacturer, and 700 tons, divided between Southern and Northern, contracted for by a Joliet consumer. Among current inquiries is one from a Chicago melter for 500 tons of foundry for December shipment. Domestic copper free low phosphorus has dropped to \$37, Valley furnace, but foreign material is offered at \$37.50 to \$38 delivered. The differential for Northern No. 1 foundry above the base price is now 50c. while \$1.50 above

base is charged for material running 2.75 to 3.25 per cent in silicon.

Quotations on Northern foundry, high phosphorus malleable and basic irons are f.o.b. local furnace and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards, or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago .....	\$36.15
Northern coke, No. 1, sil. 2.25 to 2.75, first quarter .....	28.50
Northern coke, No. 1, sil. 2.25 to 2.75, prompt delivery .....	29.50
Northern coke, foundry No. 2, sil. 1.75 to 2.25, first quarter .....	28.00
Northern coke, foundry No. 2, sil. 1.75 to 2.25, prompt .....	29.00
Malleable, not over 2.25 sil., prompt .....	29.00
Malleable, not over 2.25 sil., first quarter .....	28.00
Basic, prompt .....	29.00
Basic, first quarter .....	28.00
High phosphorus, prompt .....	29.00
High phosphorus, first quarter .....	28.00
Southern, No. 2 .....	\$28.01 to 29.01
Low phos., Valley furnace, sil. 1 to 2 per cent copper free .....	37.00
Silvery, sil. 8 per cent .....	42.29

**Plates.**—The final placing of large freight car orders by the Chicago, Milwaukee & St. Paul has added considerable tonnage to local mill books. Oil storage tank construction is also an important source of business. Local producers will furnish 12,000 tons of plates for tanks to be built at Casper, Wyo., for the Standard Oil Co. Projections are pending on 16,000 tons of tankage which will probably be placed this week and an inquiry from the Jenkins Petroleum Process Co. for 25 55,000-barrel tanks in the Eldorado field involves 5500 tons.

The mill quotation is 2.10c. to 2.30c., Chicago. Jobbers quote 2.90c. for plates out of stock.

**Cast Iron Pipe.**—Chicago takes bids Nov. 29 on 1550 tons of 6-, 8- and 12-in. Mount Prospect, Ill., takes figures to-day on 400 tons of the same sizes. The market remains sluggish with prices untested. Large private buyers who were in the habit of placing orders at this season to insure early delivery for spring work are postponing action on their needs. Present bookings will carry pipe shops through the end of the year and in some cases a number of weeks beyond.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., \$55.20 to \$56.20; 6-in. and above, \$51.20 to \$52.20; class A and gas pipe, \$3 extra.

**Rails and Track Supplies.**—The Louisville, Henderson & St. Louis is inquiring for 1000 tons while another Western road is in the market for 10,000 tons of standard section rails. These are the first inquiries of importance to appear since the advance in prices. Specifications for both rails and track supplies are liberal while new orders for the latter are surprisingly numerous. Demand for light rails is not particularly active.

Standard Bessemer and open-hearth rails, \$43; light rails rolled from new steel, 2.15c., f.o.b. makers' mills.

Standard railroad spikes, 2.85c. to 3c. mill; track bolts with square nuts, 3.85c. to 4c., mill; iron tie plates, 2.50c.; steel tie plates, 2.35c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.50c. base and track bolts, 4.50c. base.

**Bars.**—Demand for soft steel bars shows little change as the end of the year approaches. Users are buying freely for 1923 delivery and at the same time continue to buy small tonnages for prompt shipment. In fact, an Eastern mill last week booked a total of 2000 tons, largely in carload lots for December delivery, the price being 2c., base Pittsburgh. The demand for deformed bars for reinforcing work is unprecedented for this season. Local mill prices remain unchanged. Bar iron is firm at 2.50c., mill, but new business is still rather light. The East Chicago mill of the Republic Iron & Steel Co., which has been idle for several weeks, will resume operation next week. Hard steel bar mills find their backlogs diminishing notwithstanding a fair demand from bedstead makers, fence post manufacturers and reinforcing bar sellers. Prices, however, remain unchanged at 2c., mill.

Mill prices are: Mild steel bars, 2c. to 2.10c., Chicago; common bar iron, 2.50c., Chicago; rail steel, 2c., Chicago mill.

Jobbers quote 2.80c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 3.80c. for rounds and 4.30c. for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 2.25c. base; hoops, 4.15c.; bands, 3.55c.



**Wire Products.**—In some products, such as large head roofing nails, a seasonal let-up in demand is to be noted, but the tonnage involved is too small to affect the general situation. The leading producer has been unable to increase its operations above 60 per cent of capacity and still finds it impossible to satisfy customers on deliveries. With rare exceptions there are no accumulated stocks in the hands of the mills or the jobbers. The recent announcement of spring terms on woven fencing has brought out considerable business both from jobbers who are anticipating their spring needs and from Southern points where, of course, there are no seasonal limitations on fence construction. Wire rods are in excellent demand, particularly from wire specialty manufacturers. For mill prices see finished iron and steel, f.o.b. Pittsburgh, page 1463.

We quote warehouse prices f.o.b. Chicago: No. 9 and heavier black annealed wire and No. 9 and heavier bright basic wire, \$3.30 per 100 lb.; common wire nails, \$3.45 per 100 lb.; cement coated nails, \$2.90 per keg.

**Bolts and Nuts.**—Specifications are light and buyers generally appear to be staying out of the market in the hope that sellers will weaken. However, the September discounts are still firmly adhered to in this section.

Jobbers quote structural rivets, 3.75c.; boiler rivets, 3.85c.; machine bolts up to  $\frac{3}{4}$  x 4 in., 50 per cent off; larger sizes, 50 off; carriage bolts up to  $\frac{3}{4}$  x 6 in., 45 off; larger sizes, 45 off; hot pressed nuts, squares and hexagons, tapped, \$2.75 off; blank nuts, \$2.75 off; coach or lag screws, gimlet points, square heads, 55 per cent off.

**Sheets.**—The action of the leading producer in taking first quarter business at unchanged prices has had a stabilizing effect on the market and buying for both prompt and forward delivery is proceeding with apparently no hesitation on the part of the buyer. The local independent is allocating its first quarter output among customers.

Mill quotations are 3.35c. for No. 28 black, 2.50c. for No. 10 blue annealed and 4.35c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote f.o.b. Chicago, 4c. for blue annealed, 4.85c. for black and 5.85c. for galvanized.

**Reinforcing Bars.**—Both building and road construction are showing unusual buoyancy for this time of the year. In Missouri a total of 800 tons for state road work has been let and 2000 tons additional is about to be figured. In St. Louis County, Minn., a total of 1500 tons is pending. Notwithstanding the amount of work which continues to come up for figures, warehouse prices are still very weak. While sellers are attempting to hold the market to 2.25c. local warehouse, there have been numerous concessions below that price, in extreme cases as much as 20 and 25c. per 100 lb. Recent awards include:

St. Francis Convent, Dubuque, Iowa, 350 tons, to Concrete Steel Co.

M. Rich & Brothers, department store, Atlanta, Ga., 760 tons, to Concrete Steel Co.

Missouri State road work, 600 tons to Concrete Steel Co., and 200 tons to Corrugated Bar Co.

Chevrolet Motor Co., building, Norwood, Ohio, 600 tons to Kalman Steel Co.

Public Service Co. building, Dayton, Ohio, 300 tons to Kalman Steel Co.

Kansas State road work, 100 tons to Corrugated Bar Co. Chicago Trust Co. building, Chicago, 100 tons to Kalman Steel Co.

Sanitarium, Oak Terrace, Minn., 100 tons to Corrugated Bar Co.

High school, Laporte, Ind., 150 tons to Concrete Steel Co. Danville, Ill., Electric Light & Power Co., power plant, 100 tons to Concrete Steel Co.

Two grammar schools, St. Louis, Mo., 155 tons to Concrete Steel Co.

Pending work includes:

State of Missouri, 200 miles of road work 2000 tons, bids on general contract to be taken Dec. 2.

St. Louis County, Minn., 50 miles of road work, 1500 tons, general contract to Butler Bros., St. Paul.

Ford Motor Co. assembly plant, South Chicago, 175 tons. Jefferson School, Minneapolis, 530 tons, Kalman Steel Co., low bidder.

Southeast High School, Minneapolis, 625 tons, Kalman Steel Co. low bidder.

Third unit, Calumet power station, Commonwealth Edison Co., Chicago, 700 tons, George A. Fuller Co., general contractor.

**Structural Material.**—Building activity continues unusually active for this season. Figures are asked on a power station at Joliet, Ill., for the Public Service Co. of northern Illinois, involving 2300 tons. The Mississippi Valley Structural Steel Co. has the contract for 1685 tons for a power station at Grand Tower, Ill., to be built for the Middle West Power Co. An inquiry from an oil company for buildings in Louisiana involves 6000 tons of light structural shapes. Mills are well booked ahead and plain material prices are unchanged.

The mill quotation on plain material is 2.10c. to 2.20c., Chicago. Jobbers quote 2.90c. for plain material out of warehouses.

**Old Material.**—An unusually large quantity of railroad material has been offered on the market, further strengthening the position of consumers who have been withholding their purchases in anticipation of still lower prices. The Illinois Central takes bids to-day on 17,000 tons. This material has not all been prepared, but represents what will be shipped as accumulated at the road's Burnside shops, Chicago, in December and January. Other lists include the Burlington, 4500 tons; the Pennsylvania, Southwestern Region, 5000 tons; the Pennsylvania, Northwestern Region, 2500 tons and the Monon, 500 tons. In the East the Pennsylvania system is offering 31,000 tons. Consumptive demand is at a low ebb and current activity is confined almost wholly to purchases by dealers to cover short sales. Prices have again receded on a number of grades, but the full effects of the large railroad offerings have not yet been felt.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails .....	\$22.50 to \$23.00
Cast iron car wheels .....	24.00 to 24.50
Relaying rails, 56 and 60 lb. ....	26.00 to 27.00
Relaying rails, 65 lb. and heavier ..	32.00 to 35.00
Rolled or forged steel car wheels ..	22.00 to 22.50
Rails for rolling .....	18.00 to 18.50
Steel rails, less than 3 ft. ....	18.50 to 19.00
Heavy melting steel .....	17.00 to 17.50
Frogs, switches and guards cut apart .....	17.00 to 17.50
Shoveling steel .....	16.50 to 17.00
Drop forge flashings .....	12.00 to 12.50
Hydraulic compressed sheet .....	14.00 to 14.50
Axle turnings .....	15.00 to 15.50

Per Net Ton	
Iron angles and splice bars .....	21.00 to 21.50
Steel angle bars .....	16.50 to 17.00
Iron arch bars and transoms .....	21.00 to 21.50
Iron car axles .....	24.50 to 25.00
Steel car axles .....	17.75 to 18.25
No. 1 busheling .....	14.00 to 14.50
No. 2 busheling .....	9.50 to 10.00
Cut forge .....	15.00 to 15.50
Pipe and flues .....	11.00 to 11.50
No. 1 railroad wrought .....	15.25 to 15.75
No. 2 railroad wrought .....	15.00 to 15.50
Steel knuckles and couplers .....	19.50 to 20.00
Coil springs .....	21.00 to 21.50
No. 1 machinery cast .....	19.50 to 20.00
No. 1 railroad cast .....	18.50 to 19.00
Low phon. punchings .....	17.00 to 17.50
Locomotive tires, smooth .....	16.00 to 16.50
Machine shop turnings .....	9.50 to 10.00
Cast borings .....	13.00 to 13.50
Stove plates .....	16.00 to 16.50
Grate bars .....	16.00 to 16.50
Brake shoes .....	16.00 to 16.50
Railroad malleable .....	20.00 to 20.50
Agricultural malleable .....	20.00 to 20.50

J. Verner Critchley has been made managing director of the Coppus Engineering Corporation, Worcester, Mass., recently organized to take over the business of the Coppus Engineering & Equipment Co. and the New England Brass & Foundry Co. Mr. Critchley is the managing head of Walden-Worcester, Inc., manufacturer of wrenches, and was the founder of the Critchley Machine Screw Co. He will devote a part of his time to reorganizing the Coppus business, which is the manufacture of blowers, pumps and castings. Frans H. C. Coppus is the president of the new corporation, Harry R. McIntosh treasurer, and Linwood H. Erskine secretary. The directors are: Mr. Critchley, Mr. Coppus, Mr. Erskine, and Jerome R. George, vice-president of the Morgan Construction Co.; Frank A. Drury, William D. Lucy and George A. Gaskill. The company has an authorized capital stock of \$500,000 preferred and 10,000 common shares of no par value. All of the common and \$80,000 of the preferred stock has been issued.

## New York

### Pig Iron Buyers More Interested, But Weakness Continues

NEW YORK, Nov. 28.—Evidence of increasing interest of melters of pig iron is more positive than it was last week, but accompanying signs which are encouraging to the sellers are developments of extreme weakness, particularly in the Buffalo market, where usual differentials are being disregarded and high silicon irons are being sold for very little more than No. 2 plain. The lowest quotation on iron analyzing 1.75 to 2.25 silicon seems to be \$26, but No. 2X has sold for \$26 and No. 1X at \$27 or possibly less. In eastern Pennsylvania, the market has also slipped, but not so decidedly as in Buffalo, the eastern Pennsylvania base being \$27. The leading Virginia interest is quoting on a basis of \$28 for No. 2 plain, but sales are not large, and buyers claim to be able to shade this price. Foreign irons are somewhat lower and \$27, duty paid, can now be done on Continental grades, while Scotch can be had at \$28, duty paid. Very little foreign iron is being sold. One agency last week sold 5000 tons made up mostly of small tonnages, the largest being 500 tons. This was almost entirely domestic iron. The principal inquiries pending are one for 2000 to 3000 tons for first quarter from a New Jersey melter and 500 tons for the same delivery from another melter, both being for foundry iron, and 1000 tons of malleable for this month's delivery. Although \$23, Birmingham, is the usual quotation on Southern iron, a sale of several hundred tons was made on the basis of \$25.

We quote delivered in the New York district as follows, having added to furnace prices \$2.27 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.44 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25....	\$33.27
East. Pa. No. 2X fdy., sil. 2.25 to 2.75....	32.27
East. Pa. No. 2 fdy., sil. 1.75 to 2.25....	29.27
Buffalo, sil. 1.75 to 2.25.....	30.91
No. 2X Virginia, sil. 2.25 to 2.75.....	34.44
No. 2 Virginia, sil. 1.75 to 2.25.....	33.44

**Ferroalloys.**—Buying of ferromanganese in this market is confined to small lots at regular quotations, with some of the business taken by domestic producers. Sales of spiegeleisen are light at prevailing quotations. No business is reported in manganese ore. The 50 per cent ferrosilicon market is moderately active at unchanged quotations and negotiations on contracts for 1923 are progressing. Quotations are as follows:

Ferromanganese, domestic, furnace, nominal per ton.....	\$100.00
Ferromanganese, British, 80 per cent, f.o.b. Atlantic port .....	\$100.00
Spiegeleisen, 17 to 19 per cent, furnace.....	\$36.00
Spiegeleisen, 20 per cent, furnace or duty paid .....	\$37.00 to \$38.00
Ferrosilicon, 50 per cent, delivered, per gross ton, carloads.....	\$80.00 to \$85.00
Ferrotungsten, per lb. of contained metal, 90c. to 95c. ....	
Ferrochromium, 4 to 8 per cent carbon, 60 to 70 per cent Cr., per lb. Cr., delivered .....	13c. to 14c.
Ferrovandium, per lb. of contained vanadium .....	\$3.50 to \$4.00
Ferrocobaltititanium, 15 to 18 per cent, in carloads, per net ton.....	\$200.00

#### Ores

Manganese ore, foreign, per unit, c.i.f. 29c. to 30c.	
Tungsten ore, per unit, in 60 per cent concentrates, nominal .....	\$7.50 to \$8.50
Chrome ore, basis 48 per cent Cr <sub>2</sub> O <sub>3</sub> , crude, per ton, c.i.f. Atlantic seaboard.....	\$18.00 to \$25.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS <sub>2</sub> , New York.....	55c. to 60c.

**Cast Iron Pipe.**—Buyers are beginning to feel out the market on prices for shipment next year. The car shortage is still an obstacle to the satisfactory shipment of orders. Bids will be opened Dec. 1, on the 20,000 tons of cast iron pipe, the majority of which is 30-in., for the City of San Juan, Porto Rico. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger \$54.50; 4-in. and 5-in., \$59; 3-in., \$64.80, with \$4 additional for Class A and gas pipe. The soil pipe market continues active and prices unchanged. We quote discounts of both Southern and Northern makers, delivered New York, as follows: 2- to 6-in. standard 33 to 35 per cent off list; heavy, 43 to 45 per cent off list.

**Warehouse Business.**—Business shows a slight slackening, generally attributed to the approaching end of the year. On the whole, however, November has been a better month with most warehouses than October, although not as large a month as September. Good business is particularly reported by those warehouses which carry structural material in stock. Both bars and shapes are strong, but plates are rather weak. Sheets are unchanged, a fair number of transactions being reported at prices which range from 4.50c. and 5.50c. per lb. base on black and galvanized, respectively, up to as high as 4.90c. and 5.90c. per lb. base, the latter the established quotation of many of the warehouses in this district. Business among brass and copper warehouses is fair and prices, except on copper wire, are unchanged. We quote prices on page 1482.

**High Speed Steel.**—The market is unchanged and producers are still quoting 75c. to 80c. per lb. on 18 per cent tungsten high speed steel, with special brands of some companies ranging up to 90c. per lb.

**Finished Iron and Steel.**—Buying of finished steel products continues on a moderate scale, the demand for bars being fairly good and a number of new projects requiring structural steel have given that product a fair degree of activity. In plate there is very little being done and plate prices are weak, but no lower than in recent weeks, when it has been possible to shade 2c., Pittsburgh, by \$1 to \$2 a ton on desirable orders. Jobbers' stocks are low in some lines and they are pressing for deliveries, particularly in wire products and butt weld pipe. In the main all buyers are pursuing a careful policy, not desiring to carry any more stock than is necessary into the approaching inventory period. The Standard Oil Co. has placed 150,000 boxes of tin plate in England at a price said to correspond to \$4.25 per base box.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, structural shapes and steel plates, 2.34c.; bar iron, 2.34c.

**Coke.**—Recent quotations are being maintained and Connellsville grades are quoted \$8 to \$8.50 for foundry and \$6.50 to \$6.75, furnace. By-product is still quoted at \$14.84 to \$14.91, delivered Newark and Jersey City points.

**Old Material.**—Weakness continues. In addition to the mills that have been active in purchasing heavy melting steel, either No. 1 or of railroad quality, the Alan Wood Iron & Steel Co. has entered the market in the past week and \$16 per ton Philadelphia is being paid for heavy melting steel on this order. The Bethlehem Steel Co., is still accepting railroad steel and is stated to be extremely rigid on inspection. Dealers are offering \$16 Bethlehem. Buying continues for shipment to the Jones & Laughlin Steel Co. and also for mills at Donora and Monessen. No. 1 heavy melting steel is scarcely quotable at better than \$12.50 to \$13.50 per ton and a fair range for railroad quality is \$14.25 to \$14.75. Specification pipe is weaker, a Lebanon buyer having reduced its price from \$14.50 to \$14 per ton.

Buying prices per gross ton, New York, follow:

Heavy melting steel, yard.....	\$12.50 to \$13.50
Steel rails, short lengths, or equivalent .....	14.25 to 14.75
Rails for rolling.....	16.00 to 16.50
Relaying rails, nominal.....	21.00 to 22.00
Steel car axles.....	No market
Iron car axles.....	25.00 to 26.00
No. 1 railroad wrought.....	15.50 to 16.00
Wrought iron track.....	14.25 to 14.75
Forge fire .....	11.00 to 11.50
No. 1 yard wrought, long.....	13.50 to 14.00
Cast borings (clean).....	12.50 to 13.00
Machine-shop turnings .....	11.00 to 11.50
Mixed borings and turnings.....	11.00 to 11.50
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	10.00 to 10.50
Stove plate .....	13.00 to 13.50
Locomotive grate bars.....	14.00 to 14.50
Malleable cast (railroad).....	13.50 to 14.00
Cast-iron car wheels.....	16.50 to 17.50

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, follow:

No. 1 machinery cast.....	19.00 to 20.00
No. 1 heavy cast (columns, building materials, etc.), cupola size .....	17.00 to 17.50
No. 1 heavy cast, not cupola size .....	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.) .....	13.50 to 14.00



## Boston

### Fresh Weakness Develops in Northern Iron— German Iron Sold

BOSTON, Nov. 28.—The continued weakness of Northern iron is the outstanding feature of the market. During the early part of the past week, Buffalo iron, silicon 2.25 to 2.75 and silicon 2.75 to 3.25, sold in 100 ton lots and larger at \$27, furnace, or \$31.91 delivered. Subsequently round tonnages sold at \$26.50 and \$26 for silicon 2.25 to 2.75, and at the close of the week was offered at less than \$26, furnace, the extreme slump during a period of seven days approximating \$2 a ton. Buyers consequently show little interest in eastern Pennsylvania, Virginia or Alabama irons, prices for which, in view of developments, are purely nominal. To compete with New York State iron, eastern Pennsylvania will have to sell at around \$26.25, furnace, Virginia around \$24, and Alabama around \$20. German iron has become a factor in this market, two 1000-ton lots of silicon 2.50 plus and a smaller tonnage being reported as sold at \$27, f.o.b. dock here, duty paid, which brings the delivered price up to around \$29 to \$29.50. Continental iron, low phosphorus, is offered at less than \$27 on dock, duty paid, but better analysis iron, as well as Scotch and English, remain as heretofore. A small tonnage of Scotch sold at \$31.66 delivered, duty paid, that price representing a loss of more than \$1 a ton to the shipper. Local importers are experiencing difficulty in securing cars to make shipments. The aggregate tonnage of iron sold in the New England territory the past week amounted to but a few thousand tons.

We quote delivered prices on the basis of the latest reported sales, now infrequent, and as follows, having added to furnace prices \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia and \$9.60 from Alabama:

Eastern Penn., sil. 2.25 to 2.75	\$32.15 to \$34.65
Eastern Penn., sil. 1.75 to 2.25	31.65 to 33.65
Buffalo, sil. 2.25 to 2.75	29.91 to 30.91
Buffalo, sil. 1.75 to 2.25	29.91 to 30.91
Virginia, sil. 2.25 to 2.75	38.92
Virginia, sil. 1.75 to 2.25	37.92
Alabama, sil. 2.25 to 2.75	35.10
Alabama, sil. 1.75 to 2.25	34.60

**Iron Imports.**—Receipts of foreign iron for week ending Nov. 25 amounted to 3832 tons, contrasted with 5000 tons for the previous week. Of the 3832 tons, 1322 were Belgian and 2510 Scotch.

**Coke.**—The coke situation remains unchanged. Both New England producers are quoting on a basis of \$16 delivered within a \$3.10 freight rate zone for contract fuel, or \$1.95 to \$2.45 above prices at which 72-hour Connellsville foundry coke is offered. A readjustment of local coke prices is intimated on or about Dec. 1. New England producers are doing fairly well in the matter of deliveries, but the outlook is less encouraging due to further restrictions having been put on the largest producer in the matter of car supply. Foundries, fearing a shortage of cars during the next two months, are increasing specifications, which is a factor in slowing up deliveries in general. A steamer calling at this port with pig iron last week had several thousand tons of English coke consigned to Los Angeles interests. After discharging here, the steamer will discharge at another Atlantic port and then proceed to California.

**Warehouse Business.**—Nothing of special interest transpired during the past week. The movement of iron and steel out of stock holds up remarkably well for this time of the year, and the trade will enter the final month of 1922 in a comfortable financial and stocks position. Individual orders booked by warehouses involve small tonnages. The strength of the market is found in the large number of orders booked. The market for bolts and nuts continues firm, with an advance in prices pending. Stocks of heavy chain are broken and delays in transportation from the manufacturers are holding up business.

Jobbers quote: Soft steel bars, \$3.065 per 100 lb. base; flats, \$3.85; concrete bars, 3.16½c.; structural steel, \$3.065 to \$3.50; tire steel, \$4.50 to \$4.85; open-hearth spring steel, \$5 to \$6.50; crucible spring steel, \$12; steel bands, \$4.25; hoop steel, \$4.75; cold rolled steel, \$4 to \$4.50; refined iron, \$3.065; best refined iron, \$4.50; Wayne iron, \$5.50; Norway iron, \$6.60 to \$7.10; plates, 3.16½c. to \$3.35; No. 10 blue annealed sheets, \$4.15 per 100 lb. base; No. 28 black sheets, \$5.40; No. 28 galvanized sheets, \$6.40.

**Old Material.**—A further shrinkage in the volume of old material business in this territory is noted. With a majority of the dealers, business has been practically at a standstill the past week, and in the absence of actual transactions prices had no opportunity to change. The undertone of the market in general appears steadier than a week ago, however. Railroad embargoes are holding up shipments out of New England and some business previously booked for delivery on or before Dec. 1 will be lost. The Millers Falls branch, Connecticut Valley Street Railway, 10 miles in length, has been sold to a Greenfield, Mass., junk dealer to be dismantled.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	\$22.00 to \$22.50
No. 2 machinery cast	20.00 to 20.50
Stove plate	17.00 to 17.50
Railroad malleable	20.50 to 21.00

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	\$13.50 to \$14.50
No. 1 railroad wrought	16.00 to 16.50
No. 1 yard wrought	14.00 to 14.50
Wrought pipe (1 in. diam., over 2 ft. long)	11.00 to 11.50
Machine shop turnings	11.00 to 11.50
Cast iron borings, rolling mill	12.50 to 13.00
Cast iron borings, chemical	16.00 to 17.00
Blast furnace borings and turnings	11.00 to 11.50
Forged scrap and bundled skeleton	9.50 to 10.00
Shafting	19.00 to 19.50
Street car axles	23.00 to 24.00
Street car wheels	17.50 to 18.00
Rails for rolling	15.50 to 16.00

## Cincinnati

### Sale of 50,000 Tons of Southern Iron Reported—Northern Market Weaker

CINCINNATI, Nov. 28.—Indications point to a beginning of the long delayed buying movement, as during the week several sales of round tonnage lots were reported. A cast iron pipe maker is reported to have placed orders for approximately 50,000 tons of Southern iron for first half shipment at a price not made public, and confirmation of the purchase has been received from at least one furnace sharing in the business. The Southern market is showing a stronger front, and \$23, Birmingham, appears to be the absolute minimum on such business as is being placed. A Cincinnati melter bought 1600 tons for first quarter and a radiator company bought 1000 tons at this figure for its Southern plant. A Kentucky sanitary manufacturer placed 2000 tons at the same price. Several other smaller sales of Southern iron are reported. In the North, the market shows further weakness, and while \$27 is heard, \$28, furnace, is about the lowest price having any basis in sales. As high as \$29 was done early in the week, but tonnages are lacking to afford a test of the market. We note a sale of 2000 tons to a radiator company, at an unnamed price, and 400 tons of malleable at \$28.50, southern Ohio. A Louisville melter bought 1000 tons of Northern iron for prompt shipment at \$28, Chicago, and a Mid-Western melter 500 tons of low phosphorus. Inquiries include 3000 to 4000 tons of foundry for first quarter, and 1000 tons of foundry and malleable for the same shipment. A pump manufacturer wants 300 tons and a central Ohio melter a similar amount. A local melter is in the market for 100 tons of Bessemer. The inquiry reported last week for 18,000 tons has not been closed, and a Michigan melter who inquired for 1000 tons bought 100 for prompt shipment.

Based on freight rates of \$4.05 from Birmingham and \$2.27 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	\$27.05
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	27.55
Ohio silvery (nominal), 8 per cent.	39.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	30.27
Basic Northern	29.27
Malleable	30.27

**Finished Material.**—Some surprise was expressed among consumers of sheets that the American Sheet & Tin Plate Co. should continue, for first quarter, prices now in effect on sheets and tin plate. An advance of at least \$3 a ton on sheets and \$5 a ton on tin plate was looked for. It is reported that the leading interest will have little tonnage of sheets available

for first quarter, but that orders will be accepted for January shipment on tin plate. Independent companies are quoting the Steel Corporation prices, but are not making them for full quarter, orders being accepted only for January shipment. The market generally is rather quiet, although a few fair-sized orders for December shipment were placed last week. On bars, shapes and plates, the demand shows every indication of improvement, the number of orders placed last week showing a fair increase over the previous week. Two cents is the going price on lots offering, although on attractive tonnages 1.95c. has been quoted on bars and plates. Small angles in fair demand, but on the heavier structural shapes little interest is being shown. Some fair nail inquiries are before the trade, but mills appear to be more concerned with shipping on old contracts than adding to their troubles by taking on new business. Prices of wire products are holding firm. Light rails are in fair demand from mining districts, and prices are steady. Pipe orders are good but mills generally are three to four months behind on deliveries. There is little activity in reinforcing bars, the only new projects to come up being inquiries from a construction company for 1,000 tons for stock purposes and an extension to the United Brotherhood office building in Dayton, Ohio, which will require about 500 tons. This structure will also take about 150 tons of steel shapes for a 7-story tower to be erected on top of the building. Bids on this project will close Nov. 14. The bars required for the Norwood plant of the Chevrolet Motor Co., about 400 tons, will be supplied by Paul J. Kalman Co., Chicago. The structural steel, 450 tons, will be fabricated by the Jones & Laughlin Steel Co. Two hundred and fifty tons of bars for an academy for the Sisters of Mercy at Cincinnati, will be supplied by the Bourne-Fuller Co. The steel for the Masonic Temple at Muncie, Ind., 900 tons, is reported awarded to the Indiana Bridge Co. The Big Four Railroad will take bids Dec. 4 on its first quarter requirements of frogs and switches.

**Warehouse Business.**—Local jobbers report an exceptional demand for reinforcing bars and light structural shapes, from contractors who are rushing building projects before the cold weather sets in. There is also a good demand for wire products such as nails and plain wire, but fence is moving slowly. Prices are holding up strongly.

Cincinnati jobbers quote: Iron and steel bars, 2.95c. base; reinforcing bars, 3.05c. base; hoops, 4.05c. base; bands, 3.85c. base; shapes and plates, 3.05c. base; cold-rolled rounds, 3.75c. base; cold-rolled flats, squares and hexagons, 4.25c. base; No. 10 blue annealed sheets, 4c.; No. 28 black sheets, 4.70c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, \$3.10 per 100 lb.; common wire nails, \$3.20 per keg, base.

**Tool Steel.**—Some fair orders for high speed and carbon steels were placed last week at prices ranging from 75c. to 95c. per lb. for 18 per cent tungsten high speed steel.

**Coke.**—Fair activity is reported in the coke market, with prices unchanged from last week. Car shortage is reported from West Virginia producing centers. We note one sale of 1000 tons for December shipment, and an inquiry for 1000 tons for January. Foundry coke is more active than furnace, and there is also a good inquiry for domestic.

**Old Material.**—The Southern scrap market is showing fair activity, but in the Cincinnati district not much interest is being shown, outside of small tonnages of cast for immediate shipment. Prices are soft.

We quote dealers' buying prices, f.o.b. cars Cincinnati:

Per Gross Ton	
Bundled sheets	\$13.50 to \$14.00
Iron rails	16.50 to 17.50
Relaying rails, 50 lb. and up	26.00 to 26.50
Rails for rolling	17.50 to 18.00
Heavy melting steel	16.50 to 17.50
Steel rails for melting	15.50 to 16.50
Car wheels	19.50 to 20.00
Per Net Ton	
No. 1 railroad wrought	14.00 to 14.50
Cast borings	11.50 to 12.00
Steel turnings	11.00 to 11.50
Railroad cast	17.00 to 18.00
No. 1 machinery	20.50 to 21.00
Burnt scrap	11.50 to 12.00
Iron axles	20.00 to 20.50
Locomotive tires (smooth inside)	14.00 to 15.00
Pipes and flues	10.50 to 11.00

## Birmingham

### Indications of Heavy Buying of Pig Iron—Very Large Production

BIRMINGHAM, ALA., Nov. 27.—There are strong indications that there will be early heavy trading in pig iron. Several large consumers were sounding the market, these including pipe makers who had been leaders in the price deadlock. Several lots of 200 to 500 tons were sold in strictly Southern territory on a base of \$24, but the several lots of 1000 tons booked in the Middle West were on a base of \$23 and that was the price asked by Birmingham makers in the East. One maker was tentatively offered 6000 tons on a base of \$23 with some provisos attached and the deal was under consideration at the close of the week. Numbers of small lots sold at \$24 and a few at \$25, but it was no longer contended that the market was above \$23 for real business. The Southern melt is at a high rate and makers have no hesitancy in maintaining the present producing rate, which is highest of the year. The Tennessee company, in fact, is at highest iron-producing point in its history with seven stacks on basic and two on foundry, the active stacks including the largest and rebuilt ones. No. 1 furnace at Ensley resumed this week after a month off for repairs. The car service has so improved as to insure rapid outgo of yard stocks and improvement in the statistical position. Indications point to the shortest holidays on record in numbers of iron-consuming plants, especially those making stoves, furnaces and radiators, which are at 100 per cent and then behind in deliveries.

We quote per gross ton f.o.b. Birmingham district furnaces as follows:

Foundry, silicon 1.75 to 2.25	\$23.00
Basic	23.00
Charcoal, warm blast	32.00

**Cast Iron Pipe.**—Both pipe markets are quiet, but the pressure pipe makers have more unfilled tonnage than the soil pipe makers. The latter feel assured of a big business early in the year. The pressure pipe base is \$43 and that of soil pipe is \$50 to \$55.

**Finishing Mills.**—Southern finishing mills are without exception close to 100 per cent. The Tennessee company is pressed for production of iron sufficient to satisfy its ingot mill and the ingot mill is pressed to satisfy the finishing mills. There is not a lagging plant in the list and most are on double turn with the rail mill regularly producing 10,000 tons a week. The Connors Steel Co. is operating both hoop and band mills. The Gulf States Steel Co. and the American Steel & Wire Co. have unfilled tonnage carrying them well into the first quarter of the year. The best December on record is reported by wire mill salesmen.

**Coal and Coke.**—Coal production is averaging 345,000 tons a week, which is above normal for this time of the year, but the lion's share of the production is by the furnace companies. The coke production is at a high point, but all is cared for at \$7.50 to \$8.50 a ton. The Alabama By-Products Co. will fire its 25 new Koppers ovens this week and start work on a 4½ mile gas main to carry its gas to a number of large factories in East Birmingham. The Stockham Pipe & Fittings Co. will be among the first to tie on.

**Old Material.**—The scrap market is uneventful, the large consumers holding off until inventory period. Prices are fairly well maintained for a moderate run of business in cast materials.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Steel rails	\$16.00 to \$17.00
No. 1 steel	14.00 to 16.00
No. 1 cast	18.00 to 20.00
Car wheels	18.00 to 20.00
Tramcar wheels	17.00 to 19.00
Stove plate	16.00 to 17.00
Cast-iron borings	9.00 to 10.00
Machine shop turnings	9.00 to 10.00

The Providence Engineering Society will establish itself formally on Dec. 1 at new quarters at 44 Washington Street, Providence, where there are a lecture room accommodating 250, a secretary's room, a library and a lounge. James A. Hall, of Brown University, is president.



## Cleveland

### Buying of Pig Iron for First Quarter Is Light—Ore Shipments Nearly Ended

CLEVELAND, Nov. 28.—About a half dozen of cargoes of ore will be shipped from the upper lake ports early this week, and one cargo is scheduled for shipment from Escanaba, Friday. It is expected that this will be the only cargo shipped during December. Some of the upper lake docks are through for the season, and reports from these docks indicate that the November shipments will be about 3,300,000 tons, making the total movement for the season about 42,500,000 tons.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, \$5.95; Old range non-Bessemer, 51½ per cent iron, \$5.20; Mesabi Bessemer, 55 per cent iron, \$5.70; Mesabi non-Bessemer, 51½ per cent iron, \$5.05.

**Pig Iron.**—Buying of foundry and malleable iron for the first quarter of next year started in a very limited way during the week. One lake furnace booked a number of orders mostly in foundry iron for that delivery aggregating about 5000 tons at \$28. Another lake furnace sold something over 2000 tons for the first quarter subject to prices prevailing at time of shipment. Other first quarter inquiries pending aggregate 3000 tons. The demand for iron for early shipment is very light, although a few sales are reported in lots up to 200 tons. Shipping orders on contracts have fallen off and with limited sales some producers have commenced to pile iron. There is not much evidence of further weakening of prices during the week, although the inquiries that came out were not of sufficient size to test prices. The common lake furnace quotation on foundry iron is now \$28, although one lake furnace has made small lot sales on a \$27.50 basis. In the Valley district, \$27.50 appears to be the more general quotation, although Valley foundry iron can probably be bought at \$27. For Cleveland delivery one local producer has reduced its price 50c. a ton to \$29 at furnace and another is now quoting on a \$27.50 Valley basis, which means about a similar reduction. Outside of this territory, a few round lot sales are reported on inquiries that were noted a week ago. The American Radiator Co. has purchased 3000 tons of foundry iron, 1000 tons each for its Detroit, Springfield, Ohio, and Titusville, Pa., plants, and the American Car & Foundry Co. is understood to have purchased 3000 tons for its Detroit plant. Southern iron is now being offered at \$23 for the first quarter as well as for early shipment. Some small lot orders are being booked for early delivery, but consumers are not buying for next year. The basic market is inactive, the only inquiry being from a Pittsburgh consumer for 750 tons.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron includes a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and a \$6 rate from Birmingham.

Basic, Valley furnace.....	\$27.50
Northern No. 2 fdy., sil. 1.75 to 2.25.....	\$28.75 to 29.50
Southern fdy., sil. 1.75 to 2.25.....	29.00 to 30.00
Malleable.....	28.75 to 29.50
Ohio silvery, nominal, sil. 8 per cent.....	40.52
Standard low phos., Valley furnace.....	37.00

**Reinforcing Bars.**—A good volume of inquiry for reinforcing bars in small lots continues to come out. The Concrete Steel Co. has taken 150 tons for a building for the American Can Co., Indianapolis. Hard steel reinforcing bars are unchanged at 2c.

**Tool Steel.**—The demand is slow, with virtually no change in the price situation. High speed tool steel running 18 per cent in tungsten is generally quoted at 80c. to 90c. per lb. for small lots, although 90c. is asked for certain brands, while for round lots 60c. or lower will be quoted.

**Bolts, Nuts and Rivets.**—Some bolt and nut manufacturers are quoting present prices for the first quarter delivery. Inquiries have appeared for that delivery, but no sales are reported. With the present trend in the steel market, manufacturers feel that the cost of raw material during the first quarter will be at least as low as at present. New business is light. Demand for rivets is also light, but makers are getting good speci-

fications on contracts. Rivet prices do not appear as firm as they have been. While the leading local producer is holding to 3.15c. for structural and 3.25c. for boiler rivets, these prices are being shaded \$2 to \$3 a ton.

**Semi-Finished Steel.**—No sales were made on the local market during the week. Prices on sheet bars, billets and slabs remain nominally at \$38, although there are reports of \$37.50 quotations outside of this territory.

**Finished Material.**—Some of the automobile companies are in the market for round tonnages of steel for delivery next year and mills have closed some contracts with other consumers for the first quarter. There is also some demand from the automobile industry for forging steel and spring steel for early shipment. Current business in steel bars, plates and structural material is only moderate and is mostly in small lot orders. Wire and pipe continue active. The market is fairly firm at 2c. for steel bars, plates and structural material, although this price is being shaded in some cases. However, the concession is not usually over \$1 a ton. The Toledo Shipbuilding Co. has taken a lake boat requiring 3000 tons of plate which have not yet been placed. An order for oil refinery work requiring 600 tons has been taken by the Henry Vogt Machine Co., Louisville, Ky. Oil tank work requiring considerable plate tonnage is still pending. Inquiries for steel for building work has fallen off. Transportation conditions show no improvement, but with the release of cars that have been used for hauling coal to lake ports, considerable relief from the car shortage is expected shortly. Now that the American Sheet & Tin Plate Co. has reaffirmed its present prices for the first quarter, higher prices than 3.35c. for black, and 4.35c. for galvanized sheets have virtually disappeared, but most independent mills are still adhering to a minimum quotation of 2.60c. on blue annealed sheets or \$2 above the Steel Corporation price. This firmness is evidently due to a heavy demand for this grade. Some independent mills are not selling sheets at present prices for delivery beyond January, believing that the leading producer will be so far behind on deliveries that they may be able to mark up their prices early in the year. Independent mills are adhering to the 5c. price for automobile body sheets and are making sales at that price for delivery into the first quarter. It seems doubtful whether they will meet the Steel Corporation's 4.70c. price on these sheets.

Jobbers quote steel bars, 2.91c.; plates and structural shapes, 3.01c.; No. 9 galvanized wire, 3.30c.; No. 9 annealed wire, 2.80c.; No. 28 black sheets, 4.15c. to 4.40c.; No. 28 galvanized sheets, 5c. to 5.40c.; No. 10 blue annealed sheets, 3.70c. to 3.76c.; hoops and bands, 3.71c.; cold-rolled rounds, 3.75c.; flats, squares and hexagons, 4.25c.

**Old Material.**—Valley district mills have been doing a limited amount of buying in heavy melting steel turnings and compressed steel scrap, and there is some trading in these items between dealers. Prices show practically no change although the market is inclined to weakness. Sales for Valley delivery are reported at \$19.75 to \$21.50 for heavy melting steel; \$19.50 to \$19.75 for compressed steel and \$18 for short shoveling turnings. Shipments are being greatly delayed by car-shortage, but the release of cars with from 42 to 48-in. sides for handling scrap is expected to bring some relief. Shipments to two Valley district mills have been held up. The Baltimore & Ohio Railroad will receive bids Dec. 4 on approximately 18,000 tons of scrap.

We quote per gross ton, f.o.b. Cleveland, as follows:

Heavy melting steel.....	\$18.50 to \$19.00
Steel rails under 3 ft.....	20.00 to 20.50
Steel rails for rolling.....	20.00 to 20.50
Iron rails.....	18.00 to 18.50
Iron car axles.....	25.00 to 26.00
Low phosphorus melting.....	20.50 to 21.00
Cast borings.....	15.75 to 16.00
Machine shop turnings.....	14.50 to 14.75
Mixed borings and short turnings.....	15.50 to 16.00
Compressed steel.....	17.25 to 17.50
Railroad wrought.....	18.00 to 18.50
Railroad malleable.....	20.00
Light bundled sheet stampings.....	13.75 to 14.00
Steel axle turnings.....	16.00 to 16.50
No. 1 cast.....	20.50 to 21.00
No. 1 busheling.....	12.50 to 13.50
Drop forge flashings over 10 in.....	12.75 to 13.25
Drop forge flashings under 10 in.....	12.50 to 13.50
Railroad grate bars.....	17.00 to 18.00
Stove plate.....	17.00 to 18.00
Pipes and flues.....	13.00 to 13.75

## St. Louis

### Very Little Buying of Pig Iron — Southern \$4 Below Northern

ST. LOUIS, Nov. 28.—The volume of business being placed for pig iron—Northern or Southern make—is extremely small. Such buying as is being done is confined to carloads for prompt shipment. Melters continue to buy only from hand to mouth, and show hardly any interest in first quarter requirements. The recent declines in Southern iron have only seemed to strengthen the disposition of melters to wait for what they believe will be still lower prices. The market for Southern iron is \$23, Birmingham. Several makers are quoting \$24, but are not getting any business at that figure. The price of Northern iron is unchanged on the basis of \$30, Chicago, to compete with the price of the St. Louis Coke & Chemical Co., \$31 to \$32, Granite City, in this market. On the present basis, Southern iron is about \$4 a ton less than Northern iron, delivered St. Louis. The Federal Reserve Bank of St. Louis reports that the melt of pig iron continues on a large scale, and steel plants and foundries have business booked, which will keep them busy during the remainder of the year.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$3.28 from Birmingham (rail and water), \$5.17 from Birmingham, all rail, and 81 cents average switching charge from Granite City:

Northern foundry, sil. 1.75 to 2.25.....	\$32.14
Northern malleable, sil. 1.75 to 2.25.....	32.14
Basic .....	32.16
Southern foundry, 1.75 to 2.25.....	28.17

**Coke.**—The demand for coke from the Granite City by-product plant continues heavy. The current production, which is still 100 per cent of capacity, is being shipped out on orders on hand. There is an especially good demand for metallurgical coke, and the domestic business is increasing.

**Old Material.**—The railroads are now coming out with larger offerings, but the mills are not buying, and say they will wait until after the first of the year. In the meantime the market is dull. The Wabash has a list with 500 tons No. 1 of rails and 600 tons of yard scrap. The Frisco list includes 40 cars of scrap and 10 cars of miscellaneous rails.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton		
Iron rails .....	\$20.00 to	\$20.50
Rails for rolling.....	17.00 to	17.50
Steel rails, less than 3 ft.....	20.00 to	20.50
Relaying rails, standard section..	26.00 to	29.00
Cast iron car wheels.....	23.00 to	23.50
Heavy melting steel.....	16.00 to	16.50
Heavy shoveling steel.....	15.50 to	16.00
Frogs, switches and guards cut apart .....	16.50 to	17.00
Per Net Ton		
Heavy axles and tire turnings...	11.50 to	12.00
Steel angle bars.....	17.00 to	17.50
Iron car axles.....	26.00 to	26.50
Steel car axles.....	19.00 to	19.50
Wrought iron bars and transoms	21.50 to	22.00
No. 1 railroad wrought.....	15.50 to	16.00
No. 2 railroad wrought.....	15.00 to	15.50
Railroad springs .....	20.00 to	20.50
Steel couplers and knuckles.....	20.00 to	20.50
Cast iron borings.....	10.50 to	11.00
No. 1 busheling.....	13.00 to	13.50
No. 1 railroad cast.....	19.00 to	19.50
No. 1 machinery cast.....	20.00 to	20.50
Railroad malleable .....	18.00 to	18.50
Machine shop turnings.....	9.50 to	10.00

**Finished Iron and Steel.**—The promise of seven-day shipment obtained an order from a Kansas City concern for 100 tons of channels. This indicates that the mills are better able to make deliveries than for some time. A St. Louis railroad is in the market for a round tonnage of plates, but this is the only inquiry of consequence that has been issued by a line centering here for several weeks. It is expected that the St. Louis Southwestern will be in the market for a considerable tonnage for oil storage tanks, now that it has been decided to convert its locomotives to oil burners. Jobbers continue to show an interest in their spring fence requirements, and there has been more buying of wire

nails. The Federal Reserve Bank of St. Louis reports that wire rope manufacturers, five interests reporting, showed October sales 72½ per cent larger than a year ago.

For stock out of warehouse we quote: Soft steel bars, 2.90c. per lb.; iron bars, 2.90c.; structural shapes, 3c.; tank plates, 3c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold rolled, one pass, 4.85c.; cold drawn rounds, shafting and screw stock, 3.90c.; structural rivets, 3.85c. per 100 lb.; boiler rivets, 3.95c.; tank rivets, 3/8 in. and smaller, 55 per cent off list; machine bolts, large, 50 per cent; smaller, 50 per cent; carriage bolts, large, 45 per cent; small, 45 per cent; lag screws, 55 per cent; hot pressed nuts, square or hexagon blank, \$2.75; and tapped, \$2.75 off list.

## Buffalo

### Further Weakness in Pig Iron—Radiator Purchase Reported

BUFFALO, Nov. 28.—Quotations of \$26 on foundry pig iron, silicon 1.75 to 2.25, indicate further weakness, but sellers believe the arrival of bad weather and consequent effect on deliveries may develop a stabilized condition and that further downward trend will be stopped. On silicon 2.25 to 2.75, the current quotation is \$26.50 and on silicon 2.75 to 3.25, \$27.25. No transactions have occurred to establish the basic market, but \$27 is regarded as the correct price. Malleable is quoted the same as No. 2 plain. No big inquiries have appeared. The largest one engaging Buffalo dealers is one of 1000 tons. Reports are current that the leading radiator interest has purchased 15,000 to 20,000 tons, but verification is lacking, although it is known that this consumer was expected to come into the market for first quarter requirements.

We quote f.o.b. per gross ton Buffalo as follows, the higher price being for early shipment:

No. 1 foundry, 2.75 to 3.25 sil.....	\$27.25
No. 2X foundry, 2.25 to 2.75 sil.....	26.50
No. 2 plain, 1.75 to 2.25 sil.....	26.00
Basic .....	27.00
Malleable .....	26.00
Lake Superior charcoal.....	36.28

**Finished Iron and Steel.**—The market is colorless and no unusual buying is reported. The approach of the period when stock taking is of unusual importance and a desire exists that stocks be kept down is responsible for a great part of the disinterest. Bars are firm at 2c. and instances of higher prices are rare. Sheets are firm at 3.35c. and 4.35c., black and galvanized respectively; one interest booking considerable tonnage following announcement by the Steel Corporation of new prices. The extra list for finishes is in effect. Much of the firm sheet demand comes from the automobile trade and though the largest consumer will have the usual shutdown for inventory purposes, promise of still greater production is made.

We quote warehouse prices, Buffalo, as follows:

Structural shapes, 3.20c.; plates, 3.20c.; soft steel bars, 3.10c.; hoops, 4.10c.; bands, 3.90c.; blue annealed sheets, No. 10 gage, 4.05c.; galvanized steel sheets, No. 28 gage, 5.85c.; black sheets, No. 28, 4.85c.; cold rolled round shafting, 3.95c.

**Old Material.**—Existing quietness is expected to continue until after Jan. 1, inventory taking being already under way and efforts being exerted to keep down stock piles. Dealers are busy trading between themselves and most of them have sufficient old contracts to fill until after Jan. 1. In several instances dealers are paying a higher price to other dealers for certain grades of material than consumers are willing to pay. Heavy melting steel is slightly weaker with the apparent lack of interest of large users. Several small sales have been made at \$19 and \$19.25. Prices in several other grades have weakened.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

Heavy melting steel.....	\$19.00 to	\$19.50
Low phos., 0.04 and under.....	21.00 to	22.00
No. 1 railroad wrought.....	18.00 to	19.00
Car wheels .....	21.00 to	22.00
Machine-shop turnings .....	14.50 to	15.50
Cast iron borings.....	16.00 to	16.50
Heavy axle turnings.....	17.50 to	18.50
Grate bars .....	16.00 to	17.00
No. 1 busheling.....	16.50 to	17.50
Stove plate .....	17.00 to	18.00
Bundled sheet stampings.....	14.00 to	15.00
No. 1 machinery cast.....	20.00 to	21.00
Hydraulic compressed .....	17.00 to	17.50
Railroad malleable .....	20.50 to	21.50



## Philadelphia

### Pig Iron Prices Show Further Weakness—Demand for All Products at Low Ebb

PHILADELPHIA, Nov. 28.—Some sellers report slightly more favorable indications during the past week, but generally the markets continue quiet. In steel, pig iron and scrap, there is only a moderate demand for immediate requirements. A somewhat more active interest in first quarter needs is in evidence, particularly in pig iron, but so far this has not resulted in very much buying. Due to more active competition from Buffalo furnaces in the New England territory, eastern Pennsylvania furnaces have again reduced their quotations and most of them are now offering foundry iron at \$1 below last week's published prices.

**Pig Iron.**—Buffalo furnaces became decidedly more active in the New England market last week following the appearance of several inquiries for round tonnages of foundry iron for first quarter. To meet this competition, several of the eastern Pennsylvania furnaces reduced their prices to a basis of \$27, furnace, for No. 2 plain and \$28 for No. 2X, but even this concession did not take the business, as according to reports from Boston one or two Buffalo furnaces had gone to \$25, Buffalo, equivalent to \$26.25 at eastern Pennsylvania furnace. There has been a little better inquiry from melters in this territory, but buyers apparently have not yet made up their minds definitely that prices have reached bottom and there is a good deal of hesitancy in placing contracts for first quarter. No important transactions are reported, but sellers are confident that a substantial demand for foundry iron will develop before the first of the year. Nearly every grade of pig iron quoted in the table below shows a reduction from last week's quotations. An exception is standard low phosphorus, the price as quoted having been nominal for some time, as there has been no domestic iron available in the East. This situation will be changed, however, as the Standish furnace has gone in blast and this week will probably announce its selling price, which undoubtedly will be below \$38, the price obtained on the last sales several months ago. Imported copper-free low phosphorus iron has been selling around \$30, seaboard, and shipments have gone as far west as St. Louis, very little of this grade of iron having been made in the United States in the past several months. Copper bearing low phosphorus has been sold as low as \$32, eastern Pennsylvania furnace, but \$35 has also been obtained. Gray forge iron has been sold at \$27, furnace, and more is obtainable at this price. Virginia iron is now offered at \$28, furnace, for No. 2 plain, a reduction of \$4 a ton from the prices announced when the first Virginia stack went in blast about two months ago. Bids close on Dec. 1 for the 20,000 tons of cast iron pipe for San Juan, Porto Rico. Last week's receipts of foreign pig iron at Philadelphia were 12,870 tons, of which 12,370 tons came from England, 500 from Scotland. Iron ore receipts were 6000 tons from French Africa.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76 cents to \$1.64 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$28.14 to \$28.64
East. Pa. No. 2X, 2.25 to 2.75 sil.	29.14 to 29.64
East. Pa. No. 1X.	30.14 to 30.64
Virginia No. 2 plain, 1.75 to 2.25 sil.	33.17 to 34.17
Virginia No. 2X, 2.25 to 2.75 sil.	34.17 to 35.17
Basic delivered eastern Pa.	27.50 to 28.00
Gray forge	28.14 to 28.64
Malleable	30.64 to 31.64
Standard low phos. (f.o.b. furnace)	38.00 to 40.00
Copper bearing low phos. (f.o.b. furnace)	32.00 to 35.00

**Ferromanganese.**—A better demand for ferromanganese has been in evidence in the past week, and several sales of \$100, furnace, have been made. British agents continue to quote \$100, seaboard, for the imported alloy.

**Finished Steel.**—Shapes and bars continue fairly firm at 2c., Pittsburgh, but there continues to be weak-

ness in the plate price. Sellers admit that sales at 1.90c. and 1.95c., Pittsburgh, have been reported to them, but few, if any, of such transactions have been definitely traced. Most of the current orders are for small lots, and these are being sold at 2c., Pittsburgh. On bar iron it is possible to shade 2c., Pittsburgh, on carload orders. Most of the independent mills have followed the lead of the American Sheet & Tin Plate Co. on sheet prices and contracts for first quarter have been made at 3.35c. for black and 4.35c. for galvanized, Pittsburgh. On blue annealed sheets some mills are asking 2.60c., Pittsburgh, though reports of 2.50c. quotations are presumed to be correct. In a few instances 4.50c., Pittsburgh, is being quoted on galvanized sheets.

**Warehouse Business.**—Demand for steel out of stock continues at a fairly good rate. Prices are unchanged and for local delivery are as follows:

Soft steel bars and small shapes, 3.025c.; iron bars (except bands), 3.025c.; round edge iron, 3.20c.; round edge steel, iron finish, 1½ x ½ in., 3.20c.; round edge steel planished, 4c.; tank steel plates, ¼-in. and heavier, 3.125c.; tank steel plates, ½-in., 3.33c.; blue annealed steel sheets, No. 10 gage, 3.85c.; black sheets, No. 28 gage, 4.60c.; galvanized sheets, No. 28 gage, 5.75c.; square twisted and deformed steel bars, 3.15c.; structural shapes, 3.125c.; diamond pattern plates, ¼-in., 4.80c.; ½-in., 5c.; spring steel, 4.25c.; round cold-rolled steel, 3.85c.; squares and hexagons, cold-rolled steel, 4.35c.; steel hoops, No. 13 gage and lighter, 4.25c.; steel bands, No. 12 gage to ½-in., inclusive, 3.825c.; rails, 3.025c.; tool steel, 8.50c.; Norway iron, 6.50c.

**Old Material.**—The scrap market continues inactive and prices show further weakness. Blast furnace turnings, cast borings and heavy breakable cast are lower and all prices are weak.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	\$16.00 to \$16.50
Scrap rails	16.00 to 16.50
Steel rails for rolling	19.50 to 20.00
No. 1 low phos., heavy 0.04 and under	22.00 to 23.00
Cast iron car wheels	20.00 to 21.00
No. 1 railroad wrought	19.00 to 20.00
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	15.00 to 15.50
Bundled sheets (for steel works)	14.50 to 15.00
No. 1 busheling	14.50 to 15.00
Turnings (short shoveling grade for blast furnace use)	14.50 to 15.00
Mixed borings and turnings (for blast furnace use)	14.50 to 15.00
Machine shop turnings (for steel works use)	14.50 to 15.00
Machine shop turnings (for rolling mill use)	14.50 to 15.00
Heavy axle turnings (or equivalent)	15.00 to 15.50
Cast borings (for steel works and rolling mills)	15.00 to 16.00
Cast borings (for chemical plants)	20.00 to 22.00
No. 1 cast	20.00 to 21.00
Heavy breakable cast (for steel plants)	19.00 to 19.50
Railroad grate bars	16.50 to 17.00
Stove plate (for steel plant use)	16.50 to 17.00
Railroad malleable	15.50 to 16.50
Wrought iron and soft steel pipes and tubes (new specifications)	14.00 to 14.50
Shafting	21.00 to 22.00
Steel axles	22.00

## San Francisco

### Moderate Activity in Foreign Pig Iron—Scrap at High Levels

SAN FRANCISCO, Nov. 22.—The pig iron market along the coast has been active in a small way during the past fortnight, with the southern section of the State showing the greatest buying. Several sales of fair tonnages were involved, one for 500 tons, and others for smaller amounts. It is understood that prices were attractive for the round lots, figuring something around \$31, ex ship, duty paid. On best material, the prices named are in the neighborhood of \$32. Besides this Belgian tonnage, there was some business done in Scotch iron, of which some 300 tons was moved at about \$34, ex ship, duty paid. High prices quoted on domestic iron, and the difficulties of shipment, are restraining business in domestic, so that the actual sales consummated are practically negligible.

**Cast Iron Pipe.**—A moderately good activity prevails in California, mainly in the southern section. Los Angeles has just closed for 3300 tons, and is again in the market for 2800 tons for city work. Several towns are inquiring for materials, such as El Centro, which is advertising for 200 tons. There appears to be a slightly lower tendency in prices, following the easiness in pig iron. Offers lately have been at \$1 concession, making the new price \$53 for 6-in. and larger, delivered.

**Finished Iron and Steel.**—Good activity has marked practically all the products, although business can hardly be called large. Building affords considerable opportunity for the movement of materials. The construction of commercial structures throughout the State continues on a more than normal basis, and occasional large jobs are involved. Among the latest announced are the proposed new Rosslyn Hotel for Los Angeles, which will require around 1200 tons of steel, bids for which opened yesterday; an addition to the Western States Life building of San Francisco, calling for about 300 tons of structural steel; and the Athens Athletic Club, a \$2,000,000 building for Oakland. It is understood the Southern Pacific Co. will occupy the lower floors of this structure. The proposed University of California memorial stadium is a project involving a large steel tonnage. It will be a combination of earth bowl and coliseum, and will be constructed on cement. The seating capacity is to be 72,000. Although business in the heavy materials has not been particularly conspicuous, the volume is reported satisfactory. The market on plates seems more stable with the gradual narrowing of the range of quotations by the various mills. At present the delivered price is from 2.40c. to about 2.60c., or even less. While as low as 2.35c. has been heard, it is not known that business has been placed on that basis. There is no notable change in sheets. The Shell Oil inquiry for 48 tanks of varying sizes is reported filled at prices ranging from \$3,000 to \$4,000, erected. Around 200 tons of structural shapes and plates has been awarded for the San Pedro dam. Several rail orders are around, some 400 tons having been placed for export and 300 tons for a Northern interest.

**Coke.**—A moderate trade in coke is reported in this market, but nothing of special significance is apparent. Smelters and foundries are the main buyers at present, with the former providing the greater part of the demand. The market rules around \$17, ex ship, coast ports. The movement of spot stocks of foreign material is steady.

**Old Material.**—The market on scrap remains at high levels, due to the prevailing scarcity of offerings. Some little business has been done, the majority of which is said to have been transacted in the South. Heavy melting is quoted at about \$26 per net ton, delivered at consumers' plants. Cast iron scrap is held at prices ranging from \$13.50 to \$14, per gross ton.

## RAILROAD EQUIPMENT BUYING

### Freight Car Purchases Total 9000 and Additional Inquiries 1250

The Chicago, Milwaukee & St. Paul has placed 3000 composite cars of 50 tons capacity with the Bettendorf Co., 2000 40-ton box cars with the Western Steel Car & Foundry Co. and 500 40-ton automobile cars with the General American Car Co. and is still negotiating for 2000 additional coal cars.

The Northern Pacific has placed 1000 box cars each with the American Car & Foundry Company and the Western Steel Car & Foundry Co. and still has an additional 1000 box cars to award.

The Pere Marquette has ordered 1000 box cars from the Western Steel Car & Foundry Co. and 500 hopper cars from the Ralston Steel Car Co.

The Union Pacific is inquiring for 5000 refrigerator cars for the Pacific Fruit Express.

The Rock Island lines, which recently ordered 500 box and 500 gondola cars, are now asking for figures on 500 automobile, 250 refrigerator, 250 ballast and 250 flat cars.

The Central of New Jersey has awarded 30 passenger cars to the Standard Steel Car Co. The same car builder has contracts for 40 coaches from the Long Island and 50 suburban coaches from the Rock Island lines.

The Central of New Jersey is inquiring for 5 switch engines of the six-wheel type.

## FABRICATED STEEL BUSINESS

### About 25,000 Tons of Awards and Inquiries for Half as Much

Apartment house on Fifty-fourth Street, New York, 750 tons, to A. E. Norton, Inc.

Apartment house on West Seventy-first Street, New York, 650 tons, to Paterson Bridge Co.

Chelsea Storage Warehouse, Mount Vernon, N. Y., 350 tons, to Hedden Iron Construction Co.

Methodist Episcopal Hospital, Brooklyn, 400 tons, to George A. Just Co.

Joint Disease Hospital, 124th Street, New York, 1000 tons, to Hinkle Iron Works.

Pier at Norfolk, Va., 500 tons, to Virginia Bridge & Iron Co.

Transit shed at berth 232, City of Los Angeles, 485 tons, to Austin Co.

Steel frame transit shed at berth 176, Los Angeles, 488 tons, to Austin Co.

Phelps Avenue station for Springfield, Mo., Gas & Electric Co., 214 tons, to unnamed fabricator.

Grand Tower, Ill., power station, Middlewest Power Co., mentioned last week, 1685 tons, to Mississippi Valley Structural Steel Co.

Chevrolet Motor Co., buildings, Norwood Ohio, 440 tons, to Jones & Laughlin Steel Co.

Michigan Stamping Co., plant addition, Detroit, 350 tons, to Russell Wheel & Foundry Co.

Rock Island Lines, two 60-ft. deck plate girder spans, Geneseo, Ill., 103 tons, to Milwaukee Bridge Co.

Parcel Post building, Cleveland, 785 tons, to the Forest City Steel & Iron Co.

Physicians' building, Cleveland, 350 tons, to the Forest City Steel & Iron Co.

High school, Altoona, Pa., 250 tons, to Fort Pitt Bridge Works.

Masonic Temple, Muncie, Ind., 900 tons, reported awarded to Indiana Bridge Co.

Chevrolet Motor Co. Division of General Motors Co., Buffalo, 600 tons, to Kellogg Structural Steel Co., Buffalo.

Standard Oil Co., 40 oil storage tanks, Casper, Wyo., 12,000 tons, 20 each to Chicago Bridge & Iron Works and the Graver Corporation.

Michigan Steel Corporation, Detroit, mill buildings, 1500 tons, to Jones & Laughlin Steel Co.

### Structural Projects Pending

Inquiries for structural steel work now being figured on include the following:

Apartment house at Fifth Avenue and Ninety-eighth Street, New York, 1000 tons.

Steel work at Centre Street for New York Transit Commission, 150 tons.

Bridge work for Chesapeake & Ohio Railroad, 150 tons.

Mechanics and Metals Bank, Fifty-seventh Street, New York, 300 tons.

Loft, West Thirtieth Street, New York, 600 tons.

Lehigh Portland Cement Co., Dwight P. Robinson, contractor, 700 tons.

Power station, Joliet, Ill., Public Service Co. of Northern Illinois, 2300 tons.

M. Rich & Brothers, department store, Atlanta, Ga., 1880 tons, plans revised to call for complete reinforced concrete frame.

American Rolling Mill Co., mill buildings, Ashland, Ky., 4500 tons.

American Can Co., Indianapolis, 150 tons.

United Brethren, office building, Dayton, Ohio, 150 tons.

The Hartford, Conn., branch of the American Society of Mechanical Engineers, at its November meeting last week, enjoyed motion pictures. The feature of the evening was a four-reel showing, entitled "From Ore to Finished National Pipe," which was accompanied by a lecture. The subject was treated very largely from the standpoint of the engineer. The manufacture of hats was explained by a film made at the plants of one of the largest Connecticut manufacturers, and a film, "The Winning Shot," presented by the Winchester Repeating Arms Co., New Haven, Conn., was presented. F. G. Hughes, vice-president New Departure Mfg. Co., Bristol, Conn., ball bearings and automobile parts, gave an interesting talk on "Some Problems of Management."

The Valley Forge Steel & Tool Co., 521 West Monroe Street, Chicago, announces that Harry J. Cogswell, formerly associated with the Ajax Forge Co., Chicago, has been appointed general sales manager.



# Prices Finished Iron and Steel, f.o.b. Pittsburgh

**Plates**  
Sheared, tank quality, base, per lb. ....2.00c.

**Structural Material**  
Beams, channels, etc. ....2.00c.

**Iron and Steel Bars**  
Soft steel bars, base, per lb. ....2.00c.  
Refined iron bars, base, per lb. ....2.60c.

**Hot-Rolled Flats**  
Hoops, base, per lb. ....2.75c. to 2.90c.  
Bands, base, per lb. ....2.75c. to 2.90c.  
Strips, base, per lb. ....2.75c. to 2.90c.

**Cold-Finished Steels**  
Bars and shafting, base, per lb. ....2.50c.  
Strips, base, per lb. ....4.50c.

**Wire Products**  
Nails, base, per keg. ....\$2.75  
Bright plain wire, base, per 100 lb. ....2.45  
Annealed fence wire, base, per 100 lb. ....2.45  
Spring wire, base, per 100 lb. ....3.25 to 3.35  
Galvanized wire, base, per 100 lb. ....2.95  
Galvanized barbed, base, per 100 lb. ....3.35  
Galvanized staples, base, per keg. ....3.35  
Painted barbed wire, base, per 100 lb. ....3.00  
Polished staples, base, per keg. ....3.00  
Cement coated nails, base, per count keg. ....2.20  
Woven fence, carloads (to jobbers) ....70½ per cent off list  
Woven fence, carloads (to retailers) ....68 per cent off list

**Bolts and Nuts**  
Machine bolts, small, rolled threads. .60 and 5 per cent off list  
Machine bolts, small, cut threads. .50 and 10 per cent off list  
Machine bolts, larger and longer. .50 and 10 per cent off list  
Carriage bolts, ½ x 6 in. ....  
Smaller and shorter, rolled threads. ....  
Cut threads ....50, 10 and 5 per cent off list  
Longer and larger sizes. ....50 per cent off list  
Lag bolts ....60 and 5 per cent off list  
Plow bolts, Nos. 1, 2 and 3 heads. ....50 and 10 per cent off list  
Other style heads. ....20 per cent extra  
Machine bolts, c.p.c. and t. nuts, ½ x 4 in. ....  
Smaller and shorter. ....45 per cent off list  
Larger and longer sizes. ....45 per cent off list  
Hot pressed square or hex. blank nuts. \$3.25 to \$3.50 off list  
Hot pressed nuts, tapped. ....3.25 to 3.50 off list  
C.p.c. and t. sq. or hex. nuts, blank. ....3.25 to 3.50 off list  
C.p.c. and t. sq. or hex. nuts, tapped. ....3.25 to 3.50 off list  
Semi-finished hex. nuts: ....  
9/16 in. and smaller, U. S. S. ....75, 10 and 5 per cent off list  
¾ in. and larger, U. S. S. ....70, 10 and 2½ per cent off list  
Small sizes, S. A. E. ....80 and 5 per cent off list  
S. A. E., ¾ in. and larger. ....75 and 5 per cent off list  
Stove bolts in packages. ....80 and 5 per cent off list  
Stove bolts in bulk. ....80, 5 and 2½ per cent off list  
Tire bolts ....50, 10 and 10 per cent off list

**Cap and Set Screws**  
Milled square and hex. head cap screws. ....75 per cent off list  
Milled set screws. ....75 per cent off list  
Upset cap screws. ....75 and 10 per cent off list  
Upset set screws. ....80 per cent off list

**Rivets**  
Large structural and ship rivets, base, per 100 lb. ....\$3.00  
Large boiler rivets, base, per 100 lb. ....3.10  
Small rivets ....65 and 5 to 65 per cent off list

**Track Equipment**  
Spikes, 9/16 in. and larger, base, per 100 lb. ....\$2.75  
Spikes, ½ in. and smaller, base, per 100 lb. ....3.50  
Spikes, boat and barge, base, per 100 lb. ....3.50  
Track bolts, base, per 100 lb. ....\$3.85 to 4.50  
Tie plates, per 100 lb. ....2.35  
Angle bars, base, per 100 lb. ....2.75

**Welded Pipe**  
**Butt Weld**  
Inches Steel Black Galv. Inches Iron Black Galv.  
¼ ..... 49 23½ ¼ to ¾ ..... + 7 +33  
½ ..... 55 29½ ¾ ..... 26 8  
¾ ..... 60 46½ 1 ..... 32 17  
1 ..... 64 52½ 1 to 1½ ..... 34 19  
1 to 3 ..... 66 54½

**Steel**  
Inches Black Galv.  
¼ ..... 49 23½  
½ ..... 55 29½  
¾ ..... 60 46½  
1 ..... 64 52½  
1 to 3 ..... 66 54½

**Iron**  
Inches Black Galv.  
¼ to ¾ ..... + 7 +33  
¾ ..... 26 8  
1 ..... 32 17  
1 to 1½ ..... 34 19

**Butt Weld**  
Inches Steel Black Galv. Inches Iron Black Galv.  
¼ ..... 49 23½ ¼ to ¾ ..... + 7 +33  
½ ..... 55 29½ ¾ ..... 26 8  
¾ ..... 60 46½ 1 ..... 32 17  
1 ..... 64 52½ 1 to 1½ ..... 34 19  
1 to 3 ..... 66 54½

## Lap Weld

2 ..... 59 47½ 2 ..... 29 15  
2½ to 6 ..... 63 51½ 2½ to 6 ..... 32½ 19  
7 to 8 ..... 60 47½ 7 to 12 ..... 30 17  
9 to 12 ..... 59 46½

## Butt Weld, extra strong, plain ends

¼ ..... 45 28½ ¼ to ¾ ..... +15 +48  
½ to ¾ ..... 51 34½ ¾ ..... 26 13  
¾ ..... 57 46½ ¾ ..... 32 18  
1 ..... 62 51½ 1 to 1½ ..... 34 20  
1 to 1½ ..... 64 53½  
2 to 3 ..... 65 54½

## Lap Weld, extra strong, plain ends

2 ..... 57 46½ 2 ..... 30 17  
2½ to 4 ..... 61 50½ 2½ to 4 ..... 33 21  
4½ to 6 ..... 60 49½ 4½ to 6 ..... 32 20  
7 to 8 ..... 56 43½ 7 to 8 ..... 25 13  
9 to 12 ..... 50 37½ 9 to 12 ..... 20 8

To the large jobbing trade the above discounts are increased by one point, with supplementary discounts of 5 and 2½ per cent.

## Boiler Tubes

**Lap Welded Steel** 21½ 1½ in. Charcoal Iron + 7  
2 to 2¼ in. 36 1½ to 1¾ in. 3  
2½ to 3 in. 47 2 to 2¼ in. 13  
3¼ to 13 in. 52 2½ to 3 in. 18  
3¼ to 4½ in. 20

To large buyers of steel tubes a supplementary discount of 5 per cent is allowed.

## Standard Commercial Seamless Boiler Tubes

Discounts on cold-drawn tubes in carload lots, f.o.b. Pittsburgh, follow:

1 in. .... 55 2½ and 2¾ in. .... 38  
1½ and 1¾ in. .... 47 3 in. .... 42  
1¾ in. .... 31 3¼ to 4 in. .... 47  
2 and 2¼ in. .... 34 4½ in. and 5 in. .... 39

## Hot Rolled

3 in. .... 44 3¼ to 4 in. .... 49

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

Carbon under 0.30, base. ....85 per cent off list  
Carbon 0.30 to 0.40, base. ....83 per cent off list  
Plus usual differentials and extras for cutting.

## Seamless Locomotive and Superheater Tubes

**Cents per Ft.** **Cents per Ft.**  
2-in. O.D. 12 gage. ....14 2¼-in. O.D. 10 gage. ....19  
2-in. O.D. 11 gage. ....15 3-in. O.D. 7 gage. ....34  
2-in. O.D. 10 gage. ....16 1½-in. O.D. 9 gage. ....12½  
2¼-in. O.D. 12 gage. ....16 5½-in. O.D. 9 gage. ....53  
2½-in. O.D. 11 gage. ....17 5½-in. O.D. 9 gage. ....65

## Tin Plate

Standard cokes, per base box. ....\$4.75

## Terne Plate

(Per package, 200-lb.)

8-lb. coating ..... \$9.30 25-lb. coating I. C. ....\$14.25  
8-lb. coating I. C. .... 9.60 30-lb. coating I. C. .... 15.25  
15-lb. coating I. C. .... 11.80 35-lb. coating I. C. .... 16.25  
20-lb. coating I. C. .... 13.90 40-lb. coating I. C. .... 17.25

## Sheets

### Blue Annealed

Nos. 9 and 10 (base), per lb. ....2.50c.

### Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb. ....3.35c.

Regular auto body sheets, base (22 gage), per lb. ....4.70c. to 5.00c.

### Galvanized

No. 28 (base), per lb. ....4.35c. to 4.50c.

### Tin-Mill Black Plate

No. 28 (base), per lb. ....3.35c. to 3.50c.

Manufacturers have pamphlets, which can be had upon application, giving price differentials for gage and extras for length, width, shearing, etc.

## Freight Rates

All rail freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia, domestic. ....\$0.325	Buffalo .....\$0.265	St. Louis .....\$0.43	Pacific Coast .....\$1.50
Philadelphia, export. ....0.235	Cleveland .....0.215	Kansas City .....0.735	Pac. Coast, ship plates 1.20
Baltimore, domestic. ....0.315	Cleveland, Youngstown .....0.19	Kansas City (pipe) .....0.705	Birmingham .....0.69
Baltimore, export. ....0.225	Comb. ....0.295	St. Paul .....0.595	Memphis .....0.385
New York, domestic. ....0.34	Detroit .....0.295	Omaha .....0.735	Jacksonville, all rail. ....0.50
New York, export. ....0.255	Cincinnati .....0.295	Omaha (pipe) .....0.705	Jacksonville, rail and water .....0.415
Boston, domestic. ....0.365	Indianapolis .....0.31	Denver .....1.275	New Orleans .....0.515
Boston, export. ....0.255	Chicago .....0.34	Denver (pipe) .....1.215	

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb. and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 30c. to 40c.; ship plates, 30c. to 40c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 30c. to 40c.; sheets and tin plates, 50c.; rods, wire rope cable and strands, 75c.; wire fencing, netting and stretcher, 50c.; pipe, not over 8 in. in diameter, 50c. over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

### Macungie and Tipton Blast Furnaces Sold

The Macungie and Tipton blast furnaces, which were acquired by the Replogle Steel Co. in its purchase of the properties of the Empire Steel & Iron Co., have been sold for \$25,000 each. The purchaser of the Macungie furnace at Macungie, Pa., is the East Penn Foundry Co., whose plant adjoins the furnace property. The company has not decided whether to scrap the furnace and utilize the property for a proposed extension of its plant or to operate it. The Tipton furnace has been sold to Howard Knauss and local capitalists of Tipton, Pa., and will be operated at some time in the near future. Mr. Knauss was blast furnace superintendent at Catasauqua, Pa., for the Empire Steel & Iron Co.

Two weeks ago, the directors of the Replogle Steel Co. decided to sell the properties because of the fact that iron can be made much more economically at its other furnaces and Leonard Peckitt, president, was empowered to conclude negotiations.

The Macungie furnace was built in 1874 and repaired in 1902. Its annual capacity is 25,000 tons. The Tipton furnace was built in 1873, remodeled in 1888 and rebuilt in 1892 and again repaired in 1902. Its annual capacity is 40,000 tons.

### Conference on Numbering of Steel

A conference to consider the desirability of providing a system of designating qualities or kinds of steels by code numbers, has been called by the American Engineering Standards Committee at the request of the U. S. Bureau of Standards. The conference will be held in Room 704, Department of Commerce Building, Nineteenth Street and Pennsylvania Avenue, Washington, at 10 a. m. Dec. 6.

The subject of this conference is a matter of importance to all manufacturers of steel and to all users of steel in large quantity. This conference will attempt to determine the desirability of applying a uniform numbering system to forging steels, casting steels, structural steels, including plates, tool steels or other steels not so classified.

While the American Engineering Standards Committee has invited to this conference representatives of all technical and industrial associations known to be interested in the subject, any organization which feels that it should be represented in the conference, but has received no formal invitation, is urged to communicate with the American Engineering Standards Committee, 29 West Thirty-ninth Street, New York.

The Society of Automotive Engineers has already formulated a system now in wide use, applying to the steels used in automotive practice, and there has been considerable discussion as to the advisability of applying such a system more generally.

The following are the agenda which were suggested for this conference, at an informal meeting in New York on Sept. 15, of persons interested in the topic:

Address by W. A. Durgin, chief division of simplified practice, Department of Commerce, Washington.

Election of chairman, alternate and secretary.

Resumé of present American practice and of the steps leading to the conference.

Resumé of European practice by L. H. Fry.

Is it desirable to have a uniform numbering system for forging steels?

Is it desirable to have a uniform numbering system for casting steels?

Is it desirable to have a uniform numbering system for structural steels, including plates?

Is it desirable to have a uniform numbering system for tool steels?

Is it desirable to have a uniform numbering system for any other steels?

What should be the basis of classification for such a numbering system; chemical composition, physical properties, or heat treatment?

Are there systems existing which can be used as a basis for any or all of the above groups?

What, if any, are the limitations of systems now in use or proposed?

### Engineering Co-operation with South America

The importance of the engineering co-operation and financial support of the United States in the development of South America was emphasized at a dinner tendered to Calvin W. Rice, Fred Lavis and A. W. Billings, representatives of American engineering societies, recently returned from the International Engineering Congress at Rio de Janeiro in September. W. L. Saunders, chairman of the board of directors Ingersoll-Rand Co., presided over the affair, which was held at the Engineers Club, New York, Nov. 28 and attended by representatives of the four national engineering societies, the Western Society of Engineers, the Engineers Club of Philadelphia and the joint activities of these organizations.

Fred Lavis, one of the delegates representing the American Society of Civil Engineers, pointed out that South America is at the threshold of a great period of development and emphasized the opportunity of American engineering and finance.

Calvin W. Rice, secretary of the American Society of Mechanical Engineers, the holder of credentials from the Inter-American High Commission and ten engineering societies of America and Canada, made a trip to Buenos Aires, Montevideo, Santiago, Lima and Havana after the close of the congress at Rio de Janeiro. In speaking of his trip, Mr. Rice emphasized the mission of the engineering profession as the development of the world as a place of co-operative friendship, which he carried out in his trip by urging the adoption of international standards and by encouraging engineering organizations to devote their efforts to service for the public. The results of the congress were shown in its resolutions which established a permanent organization, set up the mechanism of the derivations of standards, and encouraged renewed consideration of a South American transcontinental railroad. Everywhere in South America, Mr. Rice found universal respect for the engineer, which is best shown by the fact that the name of doctor is applied only to doctors of engineering.

### Steel Quality Discussed at Washington Meeting

W. R. Shimer, metallurgist of the Bethlehem Steel Co., gave a lecture before the Washington chapter of the American Society for Steel Treating on the evening of Nov. 24. His remarks illustrated by lantern slides, traced the manufacture of steel from the ore bed to the finished product.

In the discussion of the paper James E. Howard, engineer-physicist of the bureau of safety of the Interstate Commerce Commission, remarked that experience in the behavior of steels has shown at times a close approach to the limit of ultimate endurance of the metal. "Steel rails, in railway service, afford illustrations of this kind, demanding, if attainable, an advance in the ability of the rails to meet conditions which are imposed upon them." It is a controversial point, he added, between steel makers and railroad engineers, whether the limits of endurance of steel are really being reached or whether the grades of steel put out by the steel mills are responsible for the failures of rails to endure track conditions. "Railroad engineers, almost as a unit, attribute the failures of rails to antecedent conditions at the steel and the rail mills. Track records are exhibited to show that certain heats, certain rollings, and even the output of certain years of a given mill have given unsatisfactory results, while other rails furnished under the same specifications, by the same mill, and exposed to the same track conditions, have given good accounts of themselves.

"It would be appreciated," he said, "if Mr. Shimer would tell us to what extent the proper grading of the rail steel according to quality classification would be expected to influence the results, overcome these criticisms of the railroad engineers, and improve the situation from the railroad point of view."



# NON-FERROUS METALS

## The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Straits Tin	Lead		Zinc	
	Lake	Electro-lytic*	New York	New York	St. Louis	New York	St. Louis
Nov. 29	14.12½	13.62½	36.37½	7.25	6.90	7.45	7.10
Nov. 28	14.12½	13.62½	36.05	7.25	6.90	7.35	7.00
Nov. 27	14.12½	13.62½	36.07½	7.25	6.90	7.25	6.90
Nov. 26	14.12½	13.62½	.....	7.30	6.95	7.15	6.80
Nov. 25	14.12½	13.62½	36.62½	7.30	6.95	7.35	7.00
Nov. 24	14.12½	13.62½	36.37½	7.30	6.95	7.37½	7.02½

\*Refinery quotation.

## New York

NEW YORK, Nov. 28.

The markets are generally quiet and prices are firm. Buying of copper is only moderate. The tin market is quieter than in many weeks. Lead has advanced on good demand and zinc prices have turned upward again.

**Copper.**—Buying of electrolytic copper either for domestic or foreign consumption is only moderate, but deliveries on contract continue heavy. There is some inquiry for first quarter, but most of it is confined to January-February delivery. Prices continue firm at 13.62½c., refinery, or 13.87½c., delivered, with some producers asking 14c., delivered. Lake copper is unchanged in a quiet market.

**Tin.**—The last week in the Straits tin market has been one of the duller and most uninteresting in some time. Both consumers and dealers have shown very little interest. Estimates of November deliveries into consumption place the total at about 5000 tons. The principal events of interest bearing upon the market have been the announcement of tin plate prices for the first half of next year and also a sudden realization of the trade that spot stocks of Straits tin are light. For the first time in several weeks spot Straits tin is now at a premium and the quotation to-day was 36.37½c., New York. London prices to-day were nearly £4 per ton less than a week ago at £174 12s. 6d. for spot standard, £175 12s. 6d. for future standard and £176 7s. 6d. for spot Straits. Arrivals thus far this month have been 4652 tons with 8550 tons reported afloat.

**Lead.**—The market is strong and the metal is in good demand, with sales of some large lots reported. The leading interest on Friday, Nov. 24, advanced its price 10 points to 6.90c., St. Louis, or 7.10c., New York. This move is believed to have been occasioned by placing in the market of heavy orders for December. Independents are taking business at 6.95c., St. Louis, or 7.30c., New York.

**Zinc.**—Prime Western zinc, after declining from 7.35c., St. Louis, to 6.80c., St. Louis, on Nov. 25 again reversed its course until to-day it is quoted at 7c. to 7.05c., St. Louis, or 7.35c. to 7.40c., New York. In the six days of last week the British market declined 60s. per ton and in the last two days recovered 47s. of this loss, due, it is believed, largely to speculative influences. Domestic demand is not heavy, although fair sales were made at the low point last week. Inquiries to-day are reported as the largest in some time.

**Old Metals.**—Demand from consumers continues fair and values generally show little change this week. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	13.50
Copper, heavy and wire.....	12.50
Copper, light and bottoms.....	11.25
Heavy machine composition.....	10.25
Brass, heavy.....	8.25
Brass, light.....	6.50
No. 1 red brass or composition turnings..	9.50
No. 1 yellow rod brass turnings.....	7.75
Lead, heavy.....	6.25
Lead, tea.....	5.00
Zinc.....	5.00

**Antimony.**—Chinese metal in wholesale lots for early delivery is quoted at 6.50c., New York, duty paid.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, imported from foreign producers, is quoted at 21c. to 22c. per lb., New York, duty paid, in wholesale lots for early delivery.

## Chicago

Nov. 28.—Lead has gone up in sympathy with an advance by the leading producer. There is little trading in this metal, however, both buyers and sellers being indisposed to negotiate. Zinc took a sharp drop last week and, while it has stiffened during the past few days, is still below the quotation of Nov. 21. Copper is not in a strong position, although it is quoted the same as a week ago. The old metals are unchanged. We quote, in carload lots, lake copper, 14.37½c.; tin, 37.50c. to 38c.; lead, 7.10c.; spelter, 7.05c.; antimony, 8.50c., in less than carload lots. On old metals we quote copper wire crucible shapes and copper clips, 11.50c.; copper bottoms, 9.75c.; red brass, 9c.; yellow brass, 7c.; lead pipe, 5.25c.; zinc, 4.75c.; pewter, No. 1, 23c.; tin foil, 26c.; block tin, 30c., all buying prices for less than carload lots.

## St. Louis

Nov. 28.—On lead, we quote car lots: 6.95c. to 7.05c., and slab zinc, 7c. to 7.10c. On old metals we quote: Light brass, 3.50c.; heavy red brass and light copper, 7.50c.; heavy yellow brass, 4c.; heavy copper and copper wire, 7.50c.; zinc, 2c.; lead, 3c.; pewter, 15c.; tin foil, 20c.; tea lead, 2c.; aluminum, 9c.

## REFRACTORIES PRICES

### Concessions Are Reported in Both Fire Clay and Silica Brick—Demand Not So Active

PITTSBURGH, Nov. 27.—The market in fire clay and silica brick gives evidence of a lighter demand in that concessions from what are regarded as the regular quotations are appearing with more frequency than was the case recently. Ohio and Kentucky fire brick of high quality lately have been as low as \$41 per 1000 at works and \$43, previously the minimum in those districts, now is maximum except for very small lots. Moderate duty fire clay brick are down about \$1 per 1000 in almost all producing districts, and while Chicago and Birmingham report advances on small sales of silica brick, the prevailing price on Pennsylvania silica is \$43 and it is reported that some makers have wanted business badly enough to go below \$40 to secure it. The old price of \$45 on the latter still is being named by the larger producing interests, but it is admitted that sales are difficult with so many willing to take business for less.

Steel manufacturers, notably those who include sheets among their products, have been giving shipping instructions against old orders in silica and fire clay brick rather freely in the past few weeks. Apparently, it is planned to do a good deal of furnace repairing and rebuilding during the slack times believed to be immediately ahead. The fear of transportation snarls also probably prompts shipping directions, in order that reserves may be built up before weather conditions interfere.

The market for magnesite brick is a limited one at present prices. The cost, steel works men claim, is too high and many of them still are turning to chrome brick as a satisfactory substitute at a more reasonable price.

We quote per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania.....	\$43.00 to \$46.00	\$38.00 to \$41.00
Ohio.....	43.00 to 44.00	38.00 to 41.00
Kentucky.....	43.00 to 44.00	38.00 to 41.00
Illinois.....	43.00 to 45.00	40.00 to 42.00
Missouri.....	43.00 to 45.00	38.00 to 42.00
Ground fire clay, per net ton.....		7.50 to 8.50
Silica Brick:		
Pennsylvania.....		43.00 to 45.00
Chicago.....		50.00
Birmingham.....		48.00
Ground silica clay, per net ton.....		9.00 to 10.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.).....		70.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.).....		43.50
Chrome Brick:		
Standard size, per net ton.....		50.00

## PERSONAL

Frederick Best, secretary and director of Thomas Firth & Sons, Ltd., Sheffield, Eng., has resigned to become commercial manager of Bolckow, Vaughan & Co., Ltd., Middlesbrough. Mr. Best has been traveling in the United States and Canada for the past few weeks on business for the Firth interests and sailed Nov. 28, on the Mauretania for England. He has been connected with Thomas Firth & Sons since 1895, prior to which he was 12 years with William Jessop & Sons, Ltd., Sheffield. He became secretary of the Firth Company in 1902 and was made special director in 1909. Later he was appointed director in charge of the Tinsley steel department of that company. Mr. Best is also Firth's nominee director of Firth-Derihon Stampings, Ltd., High Speed Steel Alloys, Ltd., and chairman of the Firth-Brearley Stainless Steel Syndicate. In addition to these connections with the British companies, he is vice-president of Thomas Firth & Sons, Inc., of America and a director of the American Stainless Steel Co. Through his connections with the Firth companies in England, he was connected with the Firth-Sterling Steel Co. in this country. During the war, Mr. Best was appointed to the high speed steel advisory committee of the British Government, also acting as secretary of the aircraft steelmakers' committee.

Herbert A. Stanton, assistant treasurer in charge of credits of the Norton Co., Worcester, Mass., sailed from New York, Saturday, Nov. 25, on the Majestic for a two months' business trip in Europe.

George S. Davison, president, Allen S. Davison Co., Pittsburgh, which owns and operates the Basic Products Co. and the Sharpsville Furnace Co., has been appointed representative of the Pittsburgh Chamber of Commerce on the American committee of the International Chamber of Commerce.

Benjamin Drewes, general superintendent of foundries, Kissel Motor Car Co., Hartford, Wis., has resigned to accept the position of assistant general superintendent of foundries for Fairbanks, Morse & Co. at the Eclipse works in Beloit, Wis. Mr. Drewes will be assistant to General Superintendent R. J. Barr.

William D. Martin has been appointed assistant general manager of the Kenosha, Wis., works of the American Brass Co. (division Anaconda Copper Co.) to fill the vacancy caused by the resignation of James R. Anderson. Mr. Martin was transferred from Waterbury, Conn., to Kenosha in 1910 as purchasing agent, and more recently has supervised the sales department.

L. E. Rohland, for many years connected with the Crucible Steel Co. of America, is now associated with the Poldi Steel Corporation of America, 115 Broadway, New York, as special sales representative in charge of the demonstrating department.

A. A. Heller has taken over the management of the International Oxygen Co., Newark, N. J., in place of L. W. Hensch, secretary and general manager, resigned.

H. H. Shierk has resigned as member of the sales force of the Kearney & Trecker Corporation at Chicago to become sales representative for the Miehle Printing Press & Mfg. Co., that city.

George Macnoe, manager Boston office, W. B. Connor, Inc., has been re-called to New York to take charge of the contractors' sales department, handling heating and pumping equipment.

Bruce W. Ott, for many years identified with the Stoddard-Dayton and Maxwell Motor Car companies, has been appointed manager of the Fisher Ohio Body Corporation, Cleveland.

Fred Glover has been appointed president of the Timken-Detroit Axle Co., to succeed A. R. Demory, whose resignation from this office became effective Nov. 1. Mr. Glover became associated with the Timken organization in July, 1919, as vice-president and general manager, going from Washington, where he had been chief of the Motor Transport Service, and later chief of the Motors and Vehicle Division. The only other

change made is that of chairman of the board of directors, to which position H. W. Alden has been appointed.

C. H. Heist, superintendent of blast furnaces at the Mayville, Wis., plant of the Steel & Tube Co. of America, has been appointed assistant manager. W. C. Ratcliffe has been appointed superintendent of blast furnaces, succeeding Mr. Heist.

J. E. Stauffer, A. M. Byers Co., Pittsburgh, was elected president of the Pittsburgh Association of Purchasing Agents at the annual meeting of that organization on Nov. 22.

E. V. Wenzell will take the position of sales manager of Giddings & Lewis Machine Co., Fond Du Lac, Wis., on Dec. 1. Mr. Wenzell was connected with the Norton Co., Worcester, for 10 years as demonstrator and salesman, and when war broke out he was made captain in the Ordnance Department, during which time he spent 19 months in France in charge of all grinding equipment. On his return, he was connected with the Modern Tool Co., Erie, Pa., as assistant sales manager for 18 months, and for the past year and a half was with the Cincinnati Grinder Co. as salesman.

Carl G. Schluederberg, assistant to the managers of the supply and merchandising departments, Westinghouse Electric & Mfg. Co., left recently for a four-months trip in the Orient to study business conditions there. Mr. Schluederberg is active in electro-chemical circles and is president of the American Electro-Chemical Society.

John H. Peckham, who for several years has been New England representative of the Norton Co., Worcester, Mass., is now associated with the sales force of Henry Prentiss & Co., 149 Broadway, New York, as a grinding machine specialist covering the entire territory of the company in New England, New York, and parts of New Jersey and Pennsylvania.

J. Leo Scanlon has been appointed Buffalo representative of the Mahr Mfg. Co., with offices at 950 Ellicott Square, Buffalo.

William T. Rayner, treasurer, Gilbert & Barker Mfg. Co., Springfield, Mass., sailed recently for a pleasure trip through South American countries, which will extend over several weeks.

H. W. Bartling has been transferred from the Cleveland to the Pittsburgh district sales office, Allis-Chalmers Mfg. Co.

R. R. Robinson has been appointed assistant manager of purchasing by the Packard Motor Car Co., Detroit.

William H. Graves, assistant chief metallurgist, Packard Motor Car Co., Detroit, has been appointed chief metallurgist to succeed C. E. Barnes, who has resigned.

Lorenzo C. Dilks has been made vice-president of Starrett Brothers, 101 Park Avenue, New York, engaged in general building construction. He will have his office at 8 South Dearborn Street, Chicago. The president of the new company is Paul Starrett, formerly president of the United States Realty & Improvement Co., and of the George A. Fuller Co. Mr. Dilks has long been identified with the steel trade. He began an engineering engagement with the Pencoyd Iron Works in 1892 and specialized for years in bridge construction work. At one time he was Eastern sales manager for the Eastern Steel Co. and later became president and general manager of Milliken Brothers, New York, manufacturer of structural steel work.

Frank T. Chapman, for many years manager of sales of the Vento cast iron indirect radiation of the American Radiator Co., has become general manager of the Hargrave Service Systems, 25 West Forty-third Street, New York, supplying what is called a scientific salesmanship service dealing with fundamentals of human nature in connection with sales.

The Wilson Welder & Metals Co., New York, has just completed a repeat order for welding machines for the Polish State Railways, making a total of 13 Wilson machines for this railroad.



## OBITUARY

**FREDERICK G. NIEDRINGHAUS**, retired tinware manufacturer, died at his home in St. Louis on Nov. 25, from heart disease after an illness of 10 days. He was 86 years old. Mr. Niedringhaus was born in Westphalia, Germany, in 1837, and went to St. Louis when 18 years old. In 1856, he and his brother, William F. Niedringhaus, went into the tinware business, which was later incorporated as the St. Louis Stamping Co., and in 1899 as the National Enameling & Stamping Co. He retired as president in 1908. The brothers were among the first manufacturers of stamped tinware in this country. He founded Granite City, when a plant was established on a tract of farm land, part of what later became a great steel industrial center. Mr. Niedringhaus served one term in Congress. He is survived by his wife, a son, Thomas K. Niedringhaus, vice-president of the National Enameling & Stamping Co.; and five daughters.

**HENRY L. KINSLEY**, Wellesley, Mass., New England representative of the Warner & Swasey Co., machine tools, died Wednesday, Nov. 22, at the Natick Hospital, Natick, Mass., following an operation. Mr. Kinsley appeared on the road to recovery immediately after the operation, but on Tuesday serious complications developed. He was a native of Stoughton, Mass., and was born 68 years ago. Practically all his business life was spent in the machine tool industry. He represented the Warner & Swasey Co. with offices at Boston for more than 15 years, and probably was one of the best known machine tool men in the New England territory. Previous to his association with the company he was with the Fairbanks and the Manning, Maxwell & Moore companies.

**THOMAS M. MESTON**, president, Emerson Electric Mfg. Co., St. Louis, died there on Nov. 23. A verdict of suicide was rendered by the coroner, an autopsy showing the presence of cyanide of potassium. Mr. Meston was 51 years old. He was born in Scotland and went to Canada with his parents when a child. In 1886 he went to St. Louis and was employed by the Simmons Hardware Co. In 1897, he was made secretary of the Emerson company, vice-president in 1905, and president several years later. He leaves a wife and two children.

**CYRUS MARK**, formerly identified with the Mark Mfg. Co., Chicago, died at his home in Evanston, Ill., Nov. 25, aged 86. Until 1910 he was associated with his sons, Clayton and Anson Mark, in the Mark Mfg. Co., with plants at Evanston, and Zanesville, Ohio. The company was later merged into the Steel & Tube Co. of America, of which Clayton Mark is chairman.

**JOHN JACOB BOGERT**, president of the Bogert-Carlough Co., Paterson, N. J., died as the result of an accident on Friday, Nov. 17.

**HEDLEY P. CARTER**, vice-president and treasurer, H. C. Cook Co., manufacturer of sheet metal novelties, Ansonia, Conn., died at his home in that city on Nov. 19, aged 51.

**CHARLES GARLAND**, treasurer, Garland Mfg. Co., Pittsburgh, died at Linesville, Pa., on Nov. 23. He was born in Ireland, Jan. 18, 1869, coming to this country in 1883. He was secretary of the Westinghouse Machine Co. for a number of years, but since 1908 had been affiliated with the Garland Mfg. Co., in association with his brothers. He made his home at Edgewood, Pa., a suburb of Pittsburgh.

The eight-hour day is gradually being abandoned in Germany either by permission of the official inspectors or by mutual consent of employer and employee, according to the recent reports by the Prussian industrial inspectors. Last year more than 4500 business concerns were given permission to work longer hours, and in 1920 at least half that number received such permits.

## GERMAN FOUNDRY IRON LOWER

### Slight Pig Iron Reduction Does Not Affect Steel Prices

(By Cablegram)

**WILMERSDORF, BERLIN, GERMANY, Nov. 27.**—Foundry iron No. 1 has been reduced (from 110,173 m. per metric ton last week) to 107,765 m. [At 1 5/16c. per 100 m., the new price is equivalent to \$14.37 per gross ton, compared with \$18.19 last week, based on 1% c. per 100 m.]

Steel prices are unchanged. [Falling values of the mark, however, have dropped steel prices in international trade, though the mark quotations remain, as last week, at 161,600 m. for ingots, 219,200 m. for steel bars and 332,000 m. for thin sheets.]

### Changing Values of Currency and Prices in Germany

**BERLIN, GERMANY, Nov. 8.**—The general price-rise brought by the further depreciation of the mark, which began in late June, continues; and last month it took unexampled dimensions, bringing up with it prices of all metal products. The *Frankfurter Zeitung's* wholesale commodities index for Nov. 1, which is based on 100 for July, 1914, showed 94,492, against 43,223 on Oct. 1, 29,116 on Sept. 1, and 4,217 at the beginning of 1922. The figures show how even in times of rapid exchange depreciation prices follow currency; and they justify the belief that were the mark stabilized, German prices would speedily reach world-market level.

The rise in steel and iron prices continues. A couple of months ago the former monthly rises were replaced by weekly rises, and now increases are sometimes made at still shorter intervals. The latest prices for pig iron, with earlier figures for comparison, are (in marks per metric ton):

	Nov. 8	Oct. 11
Hematite .....	95,243	38,099
Foundry iron No. 1.....	79,342	32,696
Foundry iron No. 3.....	79,272	32,626
Siegerland steel-making iron..	75,320	31,497
Spiegeleisen .....	77,356	34,494*

The shortage of pig iron is acute, and despite complaints that the buying power of the population has been killed by the extraordinary price rise, all pig iron is not only immediately bought up, but more is imported. The Essen trade journal *Bergwerks-Zeitung* reports that some iron works have slightly cut down production; but the sole reason given is the insufficiency of paper mark working capital to finance production on an adequate scale; and the traditional remedy against this deficiency is the creation of more paper mark capital by means of inflation. The steel concerns get this new artificial capital through their credit operations; and in the lull which follows every mark exchange fall, it is as easy to finance production on the new higher price level as it was on the older lower level.

The upward movement of the products of the Steel Syndicate has been equally great. Prices here are in marks per metric ton:

	Nov. 8	Oct. 11
Ingots .....	112,800	57,640
Blooms .....	124,500	63,620
Construction forms.....	152,100	77,780
Bars .....	154,000	78,700
Wire rods.....	165,300	84,520
Thick sheets (over 5 mill.)..	173,000	88,460
Thin sheets (under 1 mill.)..	228,800	116,970

The lowest hourly wage is 66 m., the highest 89½ m. per hr., or from 528 m. to 716 m. per day. Characteristic, nevertheless, is that manufacturers complain of inability to export. The new American tariff, it is asserted, will close American markets, and the United States, France and Belgium will undersell Germany in finished metal goods. This propaganda has been so successful that a project has been submitted to cut down some of the export duties.

## British Iron and Steel Market

**Pig Iron Is Easier—Continental Prices Are Stiffer,  
Due to Fuel Difficulties, and Business Is Hard  
to Transact**

(By Cable)

LONDON, ENGLAND, Nov. 28.

Pig iron is easier on account of cheaper fuel and lessened demand for foundry grades. Shipments to the United States continue on old contracts, and sales of special analysis iron have been made covering March shipment. But new demand from America for foundry iron has become almost stagnant. Home inquiry is improving but other export buying is hampered by depreciating exchange quotations.

Hematite makers are fairly busy and their output is being increased. Prices are firm.

Continental demand for fuel has decreased considerably and the market is easier.

Foreign ore is quiet. Sellers of Bilbao Rubio ask 22½s. (\$5.08), ex-ship Tees.

Home demand for finished iron and steel is expanding. The railroads are considering next year's requirements and small lots are being placed. The Government is inviting railroad managers to meet to consider large electrical and other undertakings.

Export buying generally is quiet. Prices are firm. The Continental fuel situation is causing apprehension to Continental makers and prices generally are higher. Business is exceedingly difficult, owing to variations in quotations. Plate orders are urgently needed.

Tin plate has an easier tendency, on account of the recent weakness in tin. There is a fair amount of sales below the minimum prices fixed by the works. Export business is steady, though the individual quantities are unimportant. Home buying is good.

There have been moderate sales of galvanized sheets. The works generally are comfortably placed, but are hesitating to quote beyond January, owing to the uncertainty of spelter.

Japan is still purchasing black sheets but other markets are quiet.

We quote per gross ton, except where otherwise stated, f.o.b. maker's works, with American equivalent figured at \$4.52 per £1, as follows:

Durham coke, delivered	£1 8s.	to £1 10s.	\$6.33 to \$6.78
Cleveland No. 1 foundry	4 16½		21.81
Cleveland No. 3 foundry	4 12		20.79
Cleveland No. 4 foundry	4 7½		20.11
Cleveland No. 4 forge	4 4	to 4 5	18.98 to 19.21
Cleveland basic	4 0		18.08
East Coast mixed	4 13	to 4 14	21.02 to 21.24
Ferromanganese	15 0		67.80
Ferromanganese*	14 10	to £14 15s.	65.54 to \$66.67
Rails, 60 lb. and up	7 5	to 8 0	32.77 to 36.16
Billets	7 0	to 7 5	31.64 to 32.77
Sheet and tin plate bars,			
Welsh	7 0	to 7 7½	31.64 to 33.33
Tin plates, base box	0 19½	to 0 19¾	4.41 to 4.46
			C. per Lb.
Ship plates	8 10	to 9 0	1.72 to 1.82
Boiler plates	11 10	to 12 0	2.32 to 2.42
Tees	9 0	to 9 10	1.82 to 1.92
Channels	8 5	to 8 15	1.66 to 1.77
Beams	8 5	to 8 15	1.66 to 1.77
Round bars, ¾ to 3 in.	9 0	to 9 10	1.82 to 1.92
Galvanized sheets, 24 g.	17 2½	to 17 10	3.45 to 3.50
Black sheets, 24 gage	11 15		2.37
Black sheets, Japanese			
specifications	15 5		3.08
Steel hoops	11 0	& 11 10*	2.22 & 2.32*
Cold rolled steel strip,			
20 g.	22 2½		4.46
Cotton ties, Indian spec-			
ifications	15 0		3.03

\*Export price.

### Continental Prices, All F. O. B. Channel Ports, Delivery as Specified

No. 3 foundry pig iron:				
Belgium, Jan., Feb.	£4 7½s.	to £4 10s.	\$20.11 to \$20.34	
Luxemburg, Jan.,				
Feb.	4 7½	to 4 10	20.11 to 20.34	
France, Jan., Feb.	4 7½	to 4 10	20.11 to 20.34	
Billets:				
France, Jan.	5 0	to 5 15	22.60 to 25.99	
Luxemburg, Jan.	5 0	to 5 15	22.60 to 25.99	
Lorraine, Jan.	5 0	to 5 15	22.60 to 25.99	

Wire nails (keg basis):				
Germany	0 14½			3.28
Belgium	0 20½			4.63
Wire rods, 5 mm. (0.2 in.):				
Belgium	7 5	to 10 7½	32.77 to 35.89	
Angles:				C per Lb.
Belgium	7 7½			1.49
Tees:				
Belgium	8 5			1.66
Merchant bars:				
Belgium, Jan., Feb.	6 15			1.26
Luxemb'g, Jan., Feb.	6 12½	to 6 15	1.24 to 1.36	
France, Jan., Feb.	7 0	to 7 2½	1.41 to 1.44	
Germany, Mar., Apr.	6 15			1.36
Joists (beams):				
France, not quoted.				
Belgium, Jan., Feb.	6 0			1.21
Luxemb'g, Jan., Feb.	6 2½			1.24
Channels:				
Belgium	7 10	to 7 12½	1.51 to 1.54	
¾-in. plates:				
Germany, Dec., Jan.	6 10			1.31
Belgium, Jan.	6 10	to 6 12½	1.31 to 1.34	
Luxemburg, Jan.	6 10	to 6 12½	1.31 to 1.34	
France, Jan.	6 10	to 6 12½	1.31 to 1.34	
No. 8 gage wire:				
Belgium	14 10%			2.93

### Less Pig Iron Demand from America—Continental and Export Business Poor

LONDON, ENGLAND, Nov. 16.—The advent of the general election has rather tended to moderate dealings in the iron and steel markets, but a certain amount of business has been put through. Less and less is heard of American demand for the better grades of foundry iron, but sales of special irons are still taking place on United States account, and shipments up to March have been booked. With the falling off in the American inquiries, the market here has been easier, as other export buying is quiet, Continental purchases being hampered by the erratic movements in the exchange rates. There is, however, some increase in requirements, and this has tended to keep the market at its present level. Output has been increased by one or two furnaces, but producers are still far from disposed to making any general increase in production, owing to the high cost of fuel. The current quotation for No. 3 Cleveland G. M. B. is about 92s. 6d., but makers would grant concessions for shipment beyond December.

In finished iron and steel, more orders have been coming to various steel works, more especially in connection with structural orders in the home trade, and certain works are now better situated, but in the main, order books are far from filled. Export buying, apart from Colonial Government orders, is slow, but it is anticipated that before long India will be beginning to place her requirements for next year and negotiations are already proceeding for rail contracts.

Plate makers are badly wanting orders, particularly for heavy specifications, but these should be supplied soon, as more and more orders for new boats are being placed by the Orient, Ellerman, Elder, Dempster and other lines, and here it is interesting to note that Messrs. Harland & Wolff have just completed the construction of what is claimed to be the world's largest motor liner for the West African mail and passenger services. Shipping companies are evidently feeling that prices are not likely to get much lower for some time and indeed, with costs at their present high level, it is difficult to see how steel makers can make more substantial reductions; from the financial reports of various works it would seem that in many cases the last financial year resulted in losses.

Business in the continental markets has been completely disorganized by the violent movements in the exchange rates. Merchants who were covered in francs have been enabled in some cases to sell advantageously at comparatively low prices, but most of the continental works have been disinclined to follow the fall in the exchange and sterling quotations in general have remained unchanged. It is reported, however, that works on that side are badly in want of orders for plates and beams, and for these specifications would, in several instances be prepared to take a very low figure. There has been a certain amount of speculation as to whether continental prices will go much lower, but opinion seems to rule that this can hardly be expected as the decrease in the franc means an increase in the cost of production.



## Shaping Management to New Conditions

(Continued from page 1432)

pany were outlined. Two plants are operated, one at Groton and one at Cortland, N. Y., and about 1000 persons are employed. The paper dealt with a specific type of manufacture, the continuous producing of Corona portable typewriters, their cases and a few accessories, and for their particular type of manufacture it was said to have been found expedient to departmentalize highly and to functionalize thoroughly the entire organization. Further, individual departments have been studied and every operation standardized.

Manufacturing is divided into two sections, parts to finished-parts stock, and assembly of machines from that stock. The parts-manufacturing department is made up of machine departments and finishing departments, all inspection work performed on parts, as well as the tool room and wood shop, being also classified under parts manufacturing. The flow of parts is with few exceptions continuous and there is comparatively little back flow of parts from a higher to a lower floor.

Mr. Brown outlined the general organization, and briefly noted the functions of the various departments and executives. An interesting feature was the two groups which act as consultants to the works manager in factory matters. One is the factory advisory committee, which is made up of all heads of departments except supervisors, and meets bi-monthly, passing on all major factory problems. The other advisory committee includes the former and also the supervisors, and are open forums for the discussion of any topics of general interest. "These conferences," said Mr. Brown, "enable the management to present information on sales costs, items of expense and other matters which ordinarily are not brought to the attention of foremen, but which are of interest and tend to stimulate enthusiasm and inspire confidence." These meetings are held bi-monthly also, and are addressed periodically by officials of the company.

The major part of Mr. Brown's paper dealt with the manufacturing organization and the control of operations. As a background to the story, figures as to the number of parts made and the operations performed were given. There are 671 parts on the typewriter, 139 on the case and 110 on the folding stand, the total being 920 parts. There are 355 different parts on the typewriter, 61 on the case and 37 on the stand, a total of 453 different parts. There are 1999 manufacturing operations on the typewriter, 210 on the case and 205 on the stand, a total of 2414 operations exclusive of inspection. Adding sub-assembly operations, assembly operations and inspection, the total operations approximate 4600.

Under control of operations the standardization of mechanical and chemical methods, including and establishing of manufacturing routines was described, also the standardization of tools and machines. Production tools are for the most manufactured in the plant, but machinery is not specially made if results can be secured with a standard product. The routine in connection with the designing, making, storing and issuing of tools was outlined.

### Standards Arrived at by Research

Research to secure standards of operation includes time study and experimental work. A routine instruction card is first made out for the part to be studied and standardized. Proper methods of manufacture are furnished by the methods section, after which the time study is made. The time study man determines the rate, which is passed to the head of the planning department and the works manager on a proposal sheet, for their approval. If approved, an instruction card, showing the method of operation, is issued. The operator then performs the work, according to the instruction card, using what is called an operation cost ticket, which upon completion accompanies work to the planning center, where time is recorded and inspection made. The operator's accomplishment is then posted on the record of the employees' efficiency on work completed. The routine of these records was outlined, and were said to be of value in showing relation of accom-

plishment to actual standards. Factory experimental work is under direction of the methods section, whose duty is to devise and maintain the best methods of manufacture and procedure that can be found. This is accomplished by research work on parts, careful reading of technical papers, visits to other plants, and in many other ways.

The planning department, the methods scheduling, routing, controlling and dispatching were treated at length. A record of parts is kept in what is known as the parts ledger which shows all parts on order, in process and in finished parts. From this a manufacturing order is issued, which is sent to a balance of stores ledger clerk from whom it goes to the control board division for use in planning on the control boards. The control board clerk checks up all tools and machines required in manufacturing for the order, and from a machine burden record proceeds to lay out his work on the control boards so that it will be finished on the date specified. All work shown on the control board is copied on what is known as planned operation lists by the dispatch clerk. A copy of the list is sent to the department supervisor and another to the planning center. Operation cost tickets are used, one copy going to the cost department and one to the dispatch clerk, from which the completed work may be posted on the control boards. A bill of material is sent by the dispatch clerk to the storekeeper, who issues material to the department indicated, at the time specified. All parts are forwarded from one operation to another on parts forwarding and identification tickets.

The assembling operations were taken up in detail. The first step is known as sub-assembling. Parts are requisitioned to jobs from the finished-parts stock room and delivered to the jobs in standardized trays to increase operator efficiency. Operations are on piece work and highly standardized tools and fixtures are used. When completed the sub-assemblies are sent to the assembly stock service division, placed in trays with other parts and issued to the jobs on which they are used. Major assembly work is progressive, there being a certain number of assemblers performing the same work on a job; starting with the numbering of the frame the work travels from one end of the room to the other, so that there is a continuous flow until assembly work is completed.

A card for recording the time spent by the assemblers on the various jobs is unique. The card bears the number and name of each job, serial number of the machine, which the card accompanies, and place for date and clock number of the operator. As it travels forward with the machine the stub is filled in by the operator for the job which he performs and is torn off and retained. At the end of the day all stubs are turned in to the department clerk and checked. This clerk makes out an output report for each job, and also time tickets for each operator. From data furnished by the cards a close control of assembly operations is said to be maintained.

### Many Economies from Precise Control

"Thorough functionalizing of the factory organization and the resulting development of close control on all manufacturing activities has brought about many economies," said Mr. Brown. "The control of manufacturing operations through the study of proper routing and the elimination of all unnecessary operations has resulted in lower manufacturing costs. This has been appreciably helped by the establishment of definite and precisely understood instructions for all operations whether piece work or day work. We are not content with securing efficiency through piece work, but we have also established control of production on day work on both manufacturing operations and detail inspection operations. By maintaining accurate records we are able to compare individual efficiencies on the same or on similar operations, and gradually we are establishing dependable standards for operations not on piece work as well as for those on piece work. The direct saving in labor cost through the establishment of standards and the maintenance of records has been very high, resulting in lower costs for operations and higher returns to the operator."

Control of operations through the planning system,

and especially through the functioning of the route division, are said to have permitted great reduction in process and finished-parts inventories. The stores system employed has had the same effect on raw materials inventories and a close control of assembling operations through the daily posting of string boards in the works manager's office has reduced assembly inventories by permitting operation on smaller cushions between jobs.

As an indication of the value of the accurate production control mechanism employed, the operation between the Cortland and Groton plants was outlined. Parts made at Groton are carried each week day by motor truck to Cortland plant, 11 miles away, where all sub-assembly operations and all major assembly operations are performed. Carrying cases are also manufactured. The truck takes over the parts and brings back assembled machines in their cases. In winter the 11 miles of road is kept open by a tractor-operated snow plow, and in the two years of operation, in the face of blizzards and other unfavorable conditions, it was stated that not one hour's loss of production has been suffered through failure of parts to reach the Cortland plant, or the failure of assembled machines to reach Groton.

The relations with employees and employee activities was another part of Mr. Brown's address that was received with interest. Unusual effort has been made to gain the confidence of the members of the organization in management policies. The problem of an industry in an isolated village is difficult because the people are so largely dependent on themselves for recreation and amusement, Mr. Brown said. To help in this the Corona band was organized and gymnasium and athletic activities provided.

#### Sessions Devoted to Sales And Statistics

At a session devoted to statistical compilation and some of its uses as a function of scientific management, H. B. Horwitz, Joseph & Feiss Co., Cleveland, explained the organization, operation and economies realized through the centralized statistical department of his company. Floyd W. Woodcock, Day & Zimmerman, Inc., Philadelphia, discussed the value and application statistical of compilations in the operation of public utilities. Malcolm C. Rorty, American Telephone & Telegraph Co., New York, presided.

A sales session which had for its subject "Master Budgets of Sales and Production," was presided over by Charles W. Hoyt, Hoyt's Service, Inc., New York. W. W. Duncan, manager of distribution, Hood Rubber Co., Watertown, Mass., explained the methods of his company in analyzing the market and establishing coordinated schedules of sales production and finance on the basis of that analysis. E. E. Brooks, of the Denison Mfg. Co., Framingham, Mass., explained the system used by his company, which was unique because of the wide variety of items sold. A session devoted to the supervision of personnel was intended to consider the durable things in personnel work.

#### Officers Elected

Richard A. Feiss, Joseph & Feiss Co., Cleveland, was re-elected president of the society, and E. W. Clark, 3d, Philadelphia, was re-elected treasurer. John H. Williams, Day & Zimmerman, and Keppele Hall, Joseph & Feiss Co., Cleveland, were elected directors in place of R. M. Hudson, of the Department of Commerce, Washington, and J. C. Heckman, Cheney Brothers, New York.

#### Meeting of Iron and Steel Jobbers

The executive committee of the American Iron, Steel and Heavy Hardware Association, A. H. Chamberlain, secretary, held its semi-annual meeting in New York on Thursday, Nov. 23. It was presided over by W. L. Niekamp, Beck & Corbitt Iron Co., St. Louis. A feature of the meeting was a luncheon at the Harvard Club, to which were invited a number of Eastern representatives of the jobbing trade and the New York sales managers of various steel companies. Addresses were made by Carl Snyder, of the statistical department of the Federal Reserve Bank, New York, and by C. S. Trench, of C. S. Trench & Co., New York.

## MATERIALS OF ENGINEERING

### Investigations Initiated by American Society for Testing Materials

The steel committee of the American Society for Testing Materials, known as Committee A-1, has the following under consideration among other things:

The sub-committee on steel castings is to undertake a revision of the society's present standard specifications for steel castings and has appointed a sub-sub-committee with the following personnel to investigate the subject and prepare a report:

Standard Steel Works Co., L. H. Fry, chairman; American Foundrymen's Association, A. H. Jameson; Bureau of Construction and Repair, U. S. N., F. B. Olcott; Eagan-Rogers Steel & Iron Co., J. I. Rogers; General Electric Co., J. M. Darke; Westinghouse Electric & Mfg. Co., T. D. Lynch.

The sub-committee on boiler steel is giving consideration to marking requirements for boiler steel; substitution of an increase in elongation requirement for firebox steel in lieu of an additional homogeneity test; and to permissible variations in dimensions and out-of-round of rivet bars.

The sub-committee on tool steel has made a provisional draft of specifications containing two features: a complete statement of purposes for which the various classes of carbon tool steels are frequently used, and permissible variations in dimensions of various sizes of tool teels.

The sub-committee on steel sheets has organized three sub-sub-committees to prepare specifications for cold-rolled strip steel, for automobile sheet steel, and for galvanized roofing sheets. Quite a bit of work has been done individually on specifications for cold-rolled strip steel, a number of separate specifications having been analyzed. In the preparation of specifications for automobile sheet steel, the sub-committee is co-operating with the Society of Automotive Engineers.

A revision of the tentative specifications for steel plates for forge welding is to be undertaken. The revision will be in the hands of a special committee under the chairmanship of F. N. Speller, metallurgical engineer, National Tube Co., Pittsburgh, and the committee plans to keep in touch with what is being done on similar lines by the American Welding Society and the boiler code committee of the American Society of Mechanical Engineers.

#### To Study Plate Tolerances

A special committee on plate tolerances has been established to look into the revisions of permissible variations in weight and thickness of steel plates. Past president A. A. Stevenson has been appointed chairman of the committee.

### The Science of Human Effort

At the recent meeting of the British Institute of Metals Dr. R. S. Hutton called attention to the much greater attention welfare work is now receiving in Great Britain. Previous to the war only 25 firms had established any department of this character, while today about 1000 firms have such departments. Apart from this welfare work, there is no doubt that the application of psychological methods to human effort has lagged behind the scientific study of materials. Recently, the foundation of the Institute of Industrial Psychology, to supplement the work of the Industrial Fatigue Research Board, has resulted in the appointment of C. S. Myers, late professor of psychology of Cambridge University, as director.

Studies of vocational selection, fatigue, time and motion, as well as other aspects of the problem, have been undertaken. Attention is being given to the Binet-Simon test, which had already been applied somewhat extensively in educational work as well as in the United States Army. The same type of psychological test has been made in Germany since the war, and some of the largest industrial corporations there have ascribed to it their success in getting back to



something like pre-war efficiency. This applies to such well known establishments as Carl Zeiss, Siemens and Halske, Osram Lamp Works, German General Electric Company, Krupps, as well as on the railroads and other public works.

Fatigue studies have covered a vast field, including environment, hours, physical condition, rest pauses, methods of work and other factors. No simple test has been devised to measure fatigue, but enough is known to make discrimination possible between healthy fatigue and its more detrimental and permanent occurrences.

In time and motion study, the English idea is to get away from the American forms of stimulus in the way of bonus, and to find the easiest way of performing a task, based on the innate rhythm underlying all human actions when carried out with a minimum of fatigue. In improving the process of metal polishing, as an example, careful study reduced the time occupied by 26 to 35 per cent, and, in addition, when the best way of doing the work has been ascertained, people may be taught to earn the standard wage within a few days, instead of many months.

### Standards for Oil Well Casing Threads to Be Considered

WASHINGTON, Nov. 28.—Standards for oil well casing threads will be discussed at a meeting in St. Louis, Dec. 6-8, to be attended by representatives of the American Petroleum Institute and a sub-committee of the National Screw Thread Commission on special threads. Among the members of the sub-committee are three employees of the Government and as such may be considered as representative of the United States. They are: Maj. J. O. Johnson, of the gage section of the War Department, chairman of the sub-committee; Commander M. A. Libbey of the Navy; and H. W. Bearce, of the Bureau of Standards, who is also chairman of the commission.

### Woodward Iron Co. Disaster

BIRMINGHAM, ALA., Nov. 27.—Final reckoning of the Woodward mine disaster on Nov. 20 showed 86 dead and 65 wounded. The chances were that all the wounded would recover. Total loss in damage to the mine, Dolomite No. 3, and in compensation of the victims is estimated at \$300,000. The mine damage is not great and will be shortly repaired. The victims will be cared for under the Alabama compensation act, Woodward Iron Co. being protected by insurance companies. The cause of the disaster was the setting fire to dust in the main entry caused by loosened tram cars leaving the track and striking the electric cable, which emitted sparks that ignited the dust. Official investigation by the coroner began Monday. The mine was considered a model one. Many of the 475 men in the mine when the explosion occurred escaped through other openings, the mine having several.

### Meeting of Quad City Foundrymen

The third meeting of the Quad City Foundrymen's Association was held at the Chamber of Commerce, Davenport, Iowa, at 6.45 p. m. Nov. 20. The attendance was large, 80 being present. A permanent organization was formed and the members passed a constitution and by-laws as recommended by the constitution and by-laws committee.

Henry Bornstein, chief chemist Deere & Co., gave a talk on "Chemistry and Cast Iron." This was followed by a discussion, which had to be curtailed in order that the meeting could close at 10 o'clock, which had been decided upon as the proper closing time.

The next meeting is to be held in Moline, Ill., at the new LeClaire Hotel, Dec. 18.

A. E. Hageboeck is president of the association, John Ploehn, vice-president, and R. G. Van Alstyne, secretary-treasurer.

## REFRACTORY RESEARCH

### Manufacturers Will Conduct Inquiry as to All Uses

The Refractories Manufacturers' Association, Oliver Building, Pittsburgh, has undertaken an important survey of the refractory industry, which has for its object the obtaining of a large amount of information in regard to furnace conditions which it is believed will be of much value to manufacturers and users of refractories.

This survey will probably not be completed for more than a year, and it is hoped that preliminary reports will be made at the end of the first three months, the first half year and so on, until the survey is completed. These reports will cover the information which will be gathered by using a rather elaborate questionnaire, which will be distributed to consumers of refractory brick in the thirteen industries to which the bulk of this material goes. These include blast furnaces, stoves and connections; open-hearth furnaces and metal mixers; heating, puddling and forge furnaces; cupolas; malleable furnaces; oil refineries; gas plants; glass houses; by-product coke ovens; zinc, copper and lead refineries; boilers; cement, lime and plaster kilns and kilns for burning ceramic products.

The questionnaire covers temperature and combustion conditions found in the typical furnace, abrasion, slag action, the presence or absence of uncommon furnace gases, spalling conditions, loads, insulation, character of draft, etc. This information will be sought in the industries named and the answers to the questionnaires will be sent to the Mellon Institute of Industrial Research, at Pittsburgh.

### Industrial Conference at Buffalo

BUFFALO, Nov. 24.—Elimination of waste and wider development of safety standards were the two outstanding features of the sixth annual industrial conference of the State of New York held at the Lafayette Hotel, Nov. 21, 22 and 23. Various papers were read and addresses made. Practically all the speakers agreed that much of the prevalent waste in industry would be eliminated through a better co-operation between capital and labor. Standardization was urged by one speaker as the most desirable means of eliminating waste. Another speaker on the same subject urged that labor should aline itself on the side of labor saving devices rather than against them, as a solution to the problem.

Henry D. Sayer, industrial commissioner of the State, intimated that he would resign his post shortly after the new administration takes office Jan. 1.

At the opening session, Tuesday evening, W. D. Baldwin, chairman of the board of directors of the Otis Elevator Co., urged the creation of a panel of about 150 representative business men from which arbitration bodies of five or six members could be drawn to act on all industrial problems and difficulties.

### Imports into Japan

WASHINGTON, Nov. 28.—The following table shows imports of iron and steel articles and machinery into Japan in September and October, as reported to the Department of Commerce by cable:

	September Yen	October Yen
Pig iron, ingots and slabs.....	1,970,000	2,000,000
Bar iron, rods, plates and sheets....	6,740,000	6,320,000
Pipes and tubes.....	290,000	240,000
Machinery .....	9,120,000	7,160,000

Civil service examinations are announced for assistant engineer in irrigation and drainage and for topographic and subsurface draftsman. Requests should be made for form 1312, stating the title of examination desired, and applications must be filed with the United States Civil Service Commission before Dec. 26.

### Plans of New Companies

The Tile Products, Inc., 314 West Forty-seventh Street, New York, has been incorporated with a capital of \$100,000 to manufacture building tile and kindred products. Immediate production will be delayed for a time pending preliminary developments. Officials of the company are identified with the Beaver Floor Tile Co., New York. The incorporators are: E. L. Hendrickson, F. Sells and H. A. Treat.

The Pavo Machinery Co., Brooklyn, N. Y., has been incorporated with a capital of \$30,000 to manufacture machinery and parts. It is still in the process of organization. The incorporators are O. Heyman, T. B. McGirr and J. A. Voice.

The Dunbrack Tool & Die Co., a Massachusetts corporation, capitalized at \$20,000, of which W. H. Dunbrack is president, has been organized to succeed Charles H. Lucas, 108 Alder Street, Waltham, Mass., who has been engaged for the past 15 years in the manufacture of tools, dies and gages. In addition to experimental instrument work, the new company will manufacture jigs, fixtures, cutters, gages, sub-presses and open dies. Plant extensions in the near future are under consideration. The officials of the new company were previously associated with the Keystone Watch Case Co.

The Reid Air Spring Co., 121 George Street, New Haven, Conn., was recently incorporated with a capital of \$100,000 to manufacture air springs, shock absorbers, automobile parts, etc. Equipment is being installed in a factory at 229 Commerce Street, New Haven. It is expected that production will be started before Jan. 1. Contracts for construction and equipment have been awarded. Edward Reid is president and general manager.

Edward J. Carnes, 36 Bradshaw Street, Medford, Mass., is president and treasurer of the Edward J. Carnes Co., recently incorporated under Massachusetts laws with a capital of \$50,000 to do structural steel erection work of all kinds, including buildings, bridges and industrial equipment. Mr. Carnes has had charge of the erection of many large structures in and about Boston, having been superintendent of erection, New England Structural Co., Boston, for several years. During the war he was prominently identified with Government work at Halifax and New Jersey. The new company has several contracts, including the steel for the Milk Street Realty Co., Milk Street, Boston, and is doing work in Lowell and Lawrence, Mass., and also Providence, R. I.

The Keystone Foundry Co., Lebanon, Pa., recently completed the construction of a steel building and has added some modern equipment. It will produce machine molded soft gray iron castings.

The Protect Your Home Lock Co., 309 South La Salle Street, Chicago, which was recently incorporated with a capital stock of \$50,000, will have its manufacturing done by contract and is now receiving bids. The incorporators are E. M. Wolon, W. B. Ginsberg and J. C. Wolon, secretary.

The H. R. Kuhnhardt, Jr., Corporation, 17 Battery Place, New York, has been incorporated with a capital stock of \$400,000 to manufacture refined metals, alloys, etc. According to its very comprehensive charter the company may manufacture many products, but it is definitely understood that it will not deal in steel products in the near future. It does considerable South American buying of general commodities. The incorporators are: W. W. Wait, E. Armstrong and L. Debrigard.

The Lanton Auto Equipment Co., New York, was recently incorporated with a capital stock of \$150,000 to manufacture automotive equipment and parts. Nothing definite has been decided about its future activities, since organization plans are still in the making. H. W. Nuckols and J. A. Hanf are the incorporators. The company's immediate representative is J. M. Gibbons, 3841 Grand Central Terminal, New York.

The Grove Electric Corporation, 67 Wall Street, New York, has been incorporated with a capital of \$75,000 and will engage in the construction of high-voltage transmission lines in Cleveland and contiguous territory. William H. Grove, president of the company and an engineer of wide experience, is now supervising operations in Cleveland. The other officers are: Herbert M. White of the Springs Co., 67 Wall Street, New York, secretary-treasurer; R. C. Lewis, vice-president; and J. F. Cleary, director.

The A. L. Wagner Mfg. Co., 132 King Street, New York, has been incorporated with a capital of \$50,000 to manufacture metal goods and plated metal specialties. However, no manufacturing is being contemplated at the present time, the organization merely taking over the established business of Mr. Wagner, which has handled a general line of metal goods. A. L. Wagner is the chief incorporator.

The Pacific Foundry & Machine Works, Inc., Portland, Ore., was recently incorporated to manufacture iron, steel and other metal castings, taking over a business already established. John M. Joyce, 606 Concord Building, Portland, Ore., is corporate representative.

The Swan Metallic Seal & Cap Co., 208 South LaSalle Street, Chicago, was recently organized to manufacture metal products. Contracts have been let to cover the required equipment and material. James L. Monaghan is secretary.

The Western Machine Works, Inc., Tacoma, Wash., has been incorporated to manufacture machinery and parts and to conduct a general machine shop. The new company took over a co-partnership which has been established for some time. C. P. Burkey, 807 Pacific Savings Bank Building, Tacoma, Wash., is corporate representative.

The Lewis Electric Mfg. Co., Inc., 1400 Niagara Street, Buffalo, which was recently incorporated to manufacture mechanical appliances, will have its early production done by contract and sometime later will be in the market for equipment for factories of its own. Standard production will probably not begin until about Jan. 1. E. Sears Yates is secretary.

The Cambridge & Paul Instrument Co. of America, Inc., Ossining, N. Y., was recently incorporated with a capital stock of \$200,000 to manufacture scientific and industrial instruments, taking over the business formerly conducted by Charles F. Hindle, that city, which has manufactured Cambridge & Paul instruments for 35 years. Manufacturing will be done at Ossining in the plant formerly owned by Mr. Hindle. Present plans provide for large plant expansion in the near future. The officers of the company are: Charles F. Hindle, president; John O. Hindle, secretary; and R. S. Whipple, C. C. Mason, F. Wakeham, H. B. Williams, directors.

The American Turn-Auto Co., 40 West Gay Street, Columbus, Ohio, has been incorporated under Ohio laws with a capital stock of \$2,500,000 to manufacture mechanical equipment, the chief product being the Turn-Auto, used to facilitate handling cars in repair. The Turn-Auto company will be the operating branch of a holding company. At present manufacturing is being done under contract, but this is only temporary. If the present plans carry, a number of service stations will be established at various points. Howard M. Bennett is general manager.

The Manufacturers Machine Tool & Supply Co., Inc., 256-260 Middle Street, Bridgeport, Conn., was recently organized with a capital of \$50,000 and will handle new and used machinery and mill supplies throughout the country. The officers of the company are: T. Leo Lally, president and treasurer; A. A. Johnson, vice-president; John Smith, secretary; and A. E. Wright, manager.

The Efficiency Oil Burners, Inc., 32 Broadway, New York, has been incorporated with a capital stock of \$100,000 to manufacture oil burners and fuel appliances. A Canadian branch of the same company, the Efficiency Oil Burners, Ltd., is located at 850 Burlington Street East, Hamilton, Ont. Sage Bros., Inc., 780 Union Street, Brooklyn, N. Y., will cover Greater New York and do the manufacturing for distribution in the United States, while the Hamilton factory will manufacture for Canadian distribution. However, this arrangement is only temporary. The incorporators are Harvey A. Willis, James McNaught and Henry Holmes.

Operations have been started at the new branch plant of the Chicago Nipple Mfg. Co., with other factories at Chicago and Los Angeles, Cal. The Baltimore establishment has a daily capacity of 40,000 iron pipe nipples, to which will be added a large quantity of coils, bends and pipes.

### Aborn Steel Co. Resumes Business

Announcement has been made of the resumption of business by the Aborn Steel Co. of Nos. 22 and 24 Clarke St., New York. Some months ago, following the sudden death of its president, the late Joseph T. Slingsby, the company was forced into bankruptcy. In those proceedings it developed that the financial embarrassment arose entirely from the fact that a large number of its debtors facing financial difficulties or in bankruptcy, were unable to meet their obligations to it.

On November 8 a decree confirming a composition offered by the Aborn Steel Co. and discharging it from bankruptcy was entered in the United States District Court for the Southern District of New York, and the company received back its assets from the trustee in bankruptcy and resumed business for its own account.

In the reorganization, the Aborn Holding Co., Inc. has been organized under the laws of the State of New York for the purpose of taking title to the real estate and other assets of the former company, but operations are to be conducted by the Aborn Steel Co. as operating agent of the Aborn Holding Co., Inc., which has assumed the responsibility of all the obligations. The operations of the reorganized company are under the management of J. W. Phillips, president, who for many years had represented the Aborn Steel Co. in the Metropolitan territory, but has more recently been with the firm of Peter A. Frasse & Co. Others of the older employees of the Aborn Steel Co. now remain associated with the new company, including E. E. Geiss, vice-president and J. Giegerich, secretary. The board of directors includes in its number A. Watson Current, vice-president of the First National Bank, Belleville, and Milton B. Ignatius, New York. The other directors are J. W. Phillips, E. E. Geiss and H. R. Slingsby.



# Machinery Markets and News of the Works

## RAILROADS STILL BUYING

### Pennsylvania Closing This Week on a Large List of Shop Equipment

#### Automobile Manufacturers Next in Line with Purchases—Some Other Industrial Demand

The Pennsylvania Lines East has given a number of informal orders for machine tools on the list of about 80 items issued several weeks ago. It is expected in the trade that practically all of the tools will be bought this week. The Chicago, Burlington & Quincy is also at the point of closing on its general list at Chicago, but purchases of about 30 tools for its Eola scrap yard.

Railroad purchases include a driving wheel lathe and an axle wheel lathe for the Pittsburgh & Lake Erie; a 72-in. duplex borer for the Missouri-Kansas-Texas; several tools for the Chicago & Northwestern and the Pere Marquette. The Chesapeake & Ohio is expected to place an order this week with a Cincinnati builder for six tools.

In the automotive field, there have been a number of purchasers. The Ford Motor Co. has bought three machines for its Hamilton, Ohio, plant totaling

\$30,000; the Studebaker Corporation, South Bend, Ind., has bought four turret lathes; the Stewart-Warner Speedometer Corporation, Chicago, recently purchased 16 presses from one manufacturer; the Continental Motors Corporation, Muskegon, Mich., has purchased two gang drills. Small-lot orders are coming from the motor truck industry. The Maximotors Corporation, Muskegon, Mich., has been looking up equipment in Chicago.

The Packard Motor Car Co., Detroit, is in the market for a miscellaneous list of equipment. The Ansted Engine Co., Connersville, Ind., has recently taken a contract for automobile engines and clutches which will probably necessitate buying of several tools.

Among industrial users of tools, there is a fair degree of activity, notably in the Cleveland section. The Standard Tool Co., Cleveland, has purchased 14 Pratt & Whitney automatic lathes; the Grabler Mfg. Co., Cleveland, bought 16 electrically driven grinding machines; the Hoover Suction Sweeper Co., Canton, Ohio, has purchased about 15 machines, and the National Screw & Tack Co., Cleveland, has bought several tools and will probably be in the market for more. The Pittsburgh Steel Co., Pittsburgh, has bought seven tools for its plant at Monessen, Pa. The Gopher Machine Mfg. Co., New Prague, Minn., has issued an inquiry for 14 tools. The Lehigh Portland Cement Co., Allentown, Pa., has bought several tools.

## New York

NEW YORK, Nov. 28.

AS the year draws near a close buying of machine tools continues to become smaller in volume. There is a fairly good demand for used tools, but sales of new tools have fallen off appreciably. Railroad buying is the only activity of importance, and even in this branch the individual orders are for one or two tools at a time. The Pittsburgh & Lake Erie has bought a driving wheel lathe and an axle lathe and the Missouri-Kansas-Texas Railway a 72-in. duplex borer. The Lehigh Portland Cement Co., Allentown, Pa., has bought several tools.

Few new inquiries are noted for electric traveling cranes and the hand power crane market is particularly dull. There are evidently a fair number of locomotive crane inquiries current, but reported purchases are not numerous. The Bartlett Haywood Co., Baltimore, Md., which recently closed for several overhead traveling cranes with the Chesapeake Iron Works for its new foundry, will purchase most of the other equipment for the new plant, including cupolas, tumbling barrels, ladles, etc., from the Whiting Corporation. The Brooklyn Edison Co., Brooklyn, N. Y., is stated to be on the point of closing for the two 150-ton overhead cranes, now under negotiation. The Pennsylvania Equipment Co., Norwood, Pa., wants a 25-ton, 45-ft. boom, 8-wheel used locomotive crane equipped for clamshell bucket.

Among recent purchases are:

Dwight P. Robinson & Co., 61 Broadway, New York, two 10-ton overhead traveling cranes from the Northern Engineering Works. This company has also purchased a 3-ton, 55-ft. 5½-ft. span electric crane for a new warehouse of the Walworth Mfg. Co., in Long Island City, from the Milwaukee Electric Crane & Mfg. Co.

Lehigh-Portland Cement Co., Allentown, Pa., a single leg gantry crane, 80-ft. span, 4-motor to handle 3-cu. yd. bucket for Birmingham, Ala., from the Whiting Corporation.

United Gas & Electric Co., 61 Broadway, New York, a 40-ton, electric traveling crane for Harrisburg, Pa., from the Milwaukee Electric Crane & Mfg. Co.

Truxillo Railroad Co., 40 Rector Street, New York, a Type No. 1, self propelling, steam pile driver from the Industrial Works.

Sanderson & Porter, 52 William Street, New York, is stated to have closed for a 6-ton electric crane to handle 3-cu. yd. bucket, with an unnamed builder.

Ohio Marble Co., Piqua, Ohio, a 4-motor, 87-ft. span bucket crane from the Northern Engineering Works.

New Orleans Railway & Electric Light Co., New Orleans a 3-motor, 25-ft. span and a 10-ton, 40-ft. span, 1-motor overhead traveling crane from the Northern Engineering Works.

J. A. P. Cressfield Contracting Co., Philadelphia, a 50-ton, 52-ft. span, 4-motor electric traveling crane from the Northern Engineering Works.

The Empire State Ice Co., 76 West Monroe Street, Chicago, is taking bids for the erection of a three-story plant at 161st Street and Grant Avenue, New York, to cost about \$200,000, including machinery.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until Dec. 12 for 75 pressure switches, schedule 316; also for 27,500 lbs. of steel crankshafts for the South Brooklyn Navy Yard.

The New York Edison Co., 130 East Fifteenth Street, New York, will make extensions and improvements in its power house at 33-43 Gold Street, to cost about \$100,000.

The Board of Water Supply, Municipal Building, New York, will take bids until Dec. 5 for gate valves and hydrants for the Mount Prospect, Park Slope, Fort Hamilton and Clove conduits, Catskill aqueduct. Benjamin F. Einbigger is secretary.

The Whitaker Paper Co., 48 Great Jones Street, New York, with plant at Cincinnati, has disposed of a bond issue of \$1,500,000, a portion of the proceeds to be used for extensions and improvements.

The Superior Ice Co., Inc., 50 East Forty-second Street, New York, is taking bids for a new plant at Sheepshead Bay, Brooklyn, to cost \$250,000 with equipment. Waldemar Mortensen, 209 West Seventy-sixth Street, New York, is engineer.

The Morris Tool Co., New York, has leased a portion of the building at 22 Thames Street, totaling about 4,000 sq. ft., for a new works.

The Fort Washington Auto Club, Inc., Fort Washington, New York, will build a service and machine repair shop in connection with its new two-story building, 50 x 229 ft., on Broadway, near 187th Street. Charles B. Meyers, 31 Union Square, New York, is architect.

The Kerite Insulated Wire & Cable Co., 30 Church Street, New York, with plant at Seymour, Conn., is arranging for the sale of common stock for \$1,000,000, provided by an increase in capital from \$200,000 to \$1,200,000, a portion of the proceeds to be used for extensions and improvements.

The Burnham Boiler Works, Inc., Irvington-on-Hudson, New York, has broken ground for a one-story foundry and machine shop on the Dillerville Road, Lancaster, Pa., to cost \$200,000. Frank D. Chase, Inc., 645 North Michigan Avenue, Chicago, is architect and engineer.

Luke Loughlin & Co., 114 Jefferson Avenue, Jersey City, N. J., operating an automobile business, has plans for a new one-story factory, 50 x 100 ft., at 68 Fleet Street, for the manufacture of automobile parts and equipment, estimated to cost \$20,000. John G. Helmers, 375 Summit Avenue, West Hoboken, N. J., is architect.

I. T. Williams & Sons, 367 Bay Street, Stapleton, S. I., operating a hardwood lumber plant, have acquired a portion of the former shipyard property of the S. L. Moore Corporation, a subsidiary of the Bethlehem Steel Co., Elizabeth, N. J., and will remodel the plant and remove to this location. Considerable additional machinery will be installed. Docking facilities on the waterfront, with material-handling and conveying machinery will be provided. E. R. Ballou is chief engineer in charge. Thomas R. Williams heads the company.

The Board of Education, Elizabeth, N. J., has voted in favor of an appropriation of \$495,000, for the construction of a new junior high school at Westfield Avenue and Cherry Street, to include a vocational department. Plans will be prepared by Kilham, Hopkins & Greeley, 9 Park Street, Boston.

The City Commissioners, Wildwood, N. J., will install new pumping equipment and auxiliary machinery at the municipal pumping plant in connection with extensions in the waterworks. William H. Boardman, 426 Walnut Street, Philadelphia, is engineer.

Fire, Nov. 22, destroyed a portion of the lumber plant of the Heidritter Lumber Co., South Front Street, Elizabeth, N. J., including saw mill, power house and equipment, with loss estimated at \$100,000. It is planned to rebuild. H. E. Wolff is secretary.

Plans are in progress for a merger of the American Motors Corporation, Plainfield, N. J., and the Bessemer Motor Truck Co., Philadelphia, with plant at Grove City, Pa., both manufacturers of motor trucks. The consolidation will include expansion.

The Morgan Ordnance Reserve Depot, Morgan Station, South Amboy, N. J., under the direction of the Ordnance Salvage Board, Frankford Arsenal, Philadelphia, will dispose of a quantity of equipment at the plant Dec. 13, including 3,000,000 lb. of brass; 3,000,000 lb. of steel; 50,000 lb. of copper; factory supplies and equipment, etc.

The Fischer-Sweeny Bronze Co., 312 Adams Street, Hoboken, N. J., manufacturer of brass, bronze and aluminum castings, has leased a new one-story building at Bound Brook, N. J., totaling 16,000 sq. ft. of floor space, for the establishment of a new plant. The present works at Hoboken and at Newark, N. J., will be removed to this location, where operations will be concentrated.

The Cyclone Fence Co., 233 Broadway, New York, manufacturer of metal fencing, has awarded a general contract to Walter Kidde & Co., 140 Cedar Street, for the first unit of a new plant at 796-808 Frelinghuysen Avenue, Newark, one-story, 165 x 200 ft. Additional units will be built later. The main plant is at Waukegan, Ill. Joseph Slomer, vice-president, is in charge.

John A. Harvey, 277 Sherman Avenue, Newark, N. J., manufacturer of wire products, is in the market for used insulating machinery, for wrapping magnet wire, size of wire No. 18 to 40.

Vocational departments will be installed in the proposed three new junior high schools to be erected on Renshaw Avenue, Winans Street and on South Clinton Street, Newark. The Board of Education will have plans drawn for the first noted at an early date. Dr. Clifford J. Scott is school superintendent.

The National Box & Lumber Co., 354 South Street, Newark, N. J., will prepare a list of machinery for installation in its new two-story factory on D Street, 80 x 250 ft. Hyman Rosensohn, 188 Market Street, is architect. Frank M. Edwards, company address, is in charge.

The Artistic Metal Products Co., New Jersey Railroad Avenue and Lafayette Street, Newark, has leased space in the building at 126 South Street, for a new plant. Michael Rabb is president.

The North East Electric Co., Rochester, N. Y., is inquiring for 30 Stromberg electric No. 35 recorders, tenth-hour registration.

Marvin Briggs, Inc., 167 Sixth Street, Brooklyn, N. Y., is inquiring for a right hand horizontal engine, 150 r.p.m. and cylinder diameter of approximately 24 in.

## New England

BOSTON, Nov. 27.

LITTLE transpired in the machine tool market in this section the past week to stimulate enthusiasm. Sales consisted of one or two machines in individual transactions and used tools again took the lead. In addition, the aggregate closed fell considerably short of that for the previous week in volume as well as in dollars. The Massachusetts manufacturer, who the previous week closed on more than a dozen used and new tools, purchased a new 3-in. heavy duty boring mill and a 3A used universal boring machine, which constituted the most important business from a monetary viewpoint placed by any one user. Some of New England's largest industries figured in the week's transactions, but their purchases are best described as "nibbles."

A Cincinnati maker of lathes announces an advance in prices averaging 12 per cent. The Foster line of screw machines will be 10 to 20 per cent higher, effective Dec. 1.

Notwithstanding the lull the past week, November will prove the most profitable month experienced this year by some machine tool dealers. Collectively, the trade in this territory is gaining ground, although slowly. The two most encouraging factors are the upward trend of prices and the large number of quotations out on a wide range of machines. It is believed, however, most of the prospective business will not be closed until after Jan. 1. New prospects include a 60-ton crane wanted by a bridge builder and a fairly large hand crane desired by a soap manufacturer.

Two sales at auction were held in Hartford, Conn., on Nov. 23 and 24 at the Hartford Automotive Parts Corporation and the Hartford Tool Works, Inc. Very little interest was shown except by second-hand machinery dealers, although a few purchases were made by users. At the sale at the Automotive Parts plant representatives of the Spicer Mfg. Corporation purchased a Thompson butt welder and several machine tools. This sale was of some surplus and much obsolete machinery, and most of the bidding was erratic. This was largely due to condition of some of the machines, although bids generally were low. A 1200 lb. drop hammer, brought \$1,550. Two trimming presses brought \$575 each. A 2½ in. guillotine shear brought \$650. The Thompson butt welder, which was new, brought \$340. Two Hamilton 14-in. motor-driven lathes brought \$500 each. Three New Britain automatics brought prices ranging from \$250 to \$650, the bidder at the high price being permitted to take his choice. An assorted lot of Gridleys went at \$350 for seven machines. A lot of eight Potter & Johnson machines went at \$50 each, although some of them were of late serial numbers. Out of eight Pratt & Whitney, Hendey and Becker millers, one bidder had his choice of two at \$50, the remainder going at \$15 each. A Brown & Sharpe No. 12 Miller went at \$30; a Gould & Eberhardt 14-in. shaper at \$310. At the other sale the machinery offered was generally in better condition and better prices prevailed, although here also very little interest was shown by users. One bidder, aside from dealers, was J. Andersen, a former workman in the shop, who secured a number of tools. A Gray planer, 24 in. x 6 ft., with one head, brought \$510. A Brown & Sharpe No. 1 universal grinder brought \$410. Bids on a Cincinnati No. 2 universal grinder were so low that it was withdrawn from the sale. A Jones & Lamson 3-in. x 36-in. single spindle machine brought \$425; an American 3-ft. radial, \$640; a



Kemp Smith No. 1 universal miller, \$570, and a Van Norman No. 2 duplex, \$775; a Steptoe 16-in. shaper brought \$360. Erratic bids were also more or less prevalent, as shown by \$300 bid for a Porter 16-in. x 8-ft. lathe, \$450 for an American 16-in. x 8-ft., \$300 for one American 14-in. x 6-ft., \$500 for another. A Cisco lathe, 16-in. x 6-ft., brought \$300; an American lathe, 14-in. x 6-ft., \$285.

Construction of a two-story addition, contemplated by the Home Accessories Co., 44 Pearl Street, Worcester, Mass., has been put over until May 1.

Work on a one-story, 100 x 242 ft. manufacturing unit will soon be started by the Brooks-Skinner Co., Inc., Quincy, Mass., steel garages.

The United Shoe Machinery Corporation, Beverly, Mass., recently purchased the St. Louis plant of the Haynes-Langenberg Mfg. Co., and will establish a factory there. The Haynes-Langenberg Company, gas furnace burners and furnaces, will erect a three-story plant giving 50 per cent more floor space than the building just sold.

The Standard Specialty Works, Gardner, Mass., screw machine products, is building a one-story, 40 x 100 ft. manufacturing unit.

Work has begun on a 50 x 100 ft. manufacturing unit for the Savings Spring Co., Ashland, Mass., motor truck springs. E. H. Howard, Framingham, Mass., is the engineer. The company plans to add additional units.

Machine tool sales the past week included several Hendey lathes to the Hood Rubber Co., Watertown, Mass. by the Metz Co., Waltham, Mass., automobiles. The Metz Co. is in the process of liquidation, a number of its metal-working tools having been sold during the past month.

A vocational department, consisting of five shop rooms, will be included in the new \$1,000,000 junior high school to be built by the Board of Education, Pawtucket, R. I.

Jenkins Brothers, 510 Main Street, Bridgeport, Conn., manufacturers of valves, etc., are planning the erection of a new manufacturing unit, on Main and Water Streets, to cost \$250,000. Lockwood, Greene & Co., 101 Park Avenue, New York are the engineers.

The Ford Motor Co., Highland Park, Mich., has preliminary plans for a three-story assembling plant at Cambridge, Mass., estimated to cost \$250,000. It is proposed to acquire an existing building and remodel it.

Elevating and conveying machinery, a track hopper and other equipment will be installed in the new coaling plant on Newton Street, Waltham, Mass., to be constructed by the New England Coal Co., Waltham. George P. Carver, 261 Franklin Street, Boston, is engineer.

The Utilities Power Co., Meredith, N. H., recently organized, is disposing of a bond issue of \$600,000, the proceeds to be used for the construction of a hydroelectric power plant at Ayer's Island, Bristol, N. H., and a transmission system. Later other units will be built to provide for an output of 25,000 hp. Jackson & Moreland, 387 Washington Street, Boston, are engineers. Herbert B. Rust is president.

The Hood Rubber Co., Nichols Avenue, Watertown, Mass., manufacturer of automobile tires, etc., is taking bids for a four-story addition estimated to cost \$60,000. F. C. Hood is general manager.

The Arey & Blount Electric Co., Worcester, Mass., has been incorporated with a capital of 100 shares of stock, no par value, to manufacture electrical products. Local property has been taken over and a plant will be established immediately. Ralph G. Arey is president, and William H. Blount, Box 161, Shrewsbury, Mass., treasurer.

G. Bertholdi, Peabody, Mass., care of G. A. Cornet, 10 Central Avenue, Lynn, Mass., architect, has plans nearing completion for a one-story machine shop on Wilson Square, to cost \$25,000.

The Standard Oil Co., Fall River, Mass., will commence the erection of a distributing plant at the foot of Slade Street, including pumping plant, to cost close to \$40,000.

Ovens, power equipment, elevating and conveying machinery will be installed in the one- and two-story addition, 100 x 115 ft., to be erected at the plant of the Massachusetts Baking Co., Housatonic Avenue, Bridgeport, Conn., to cost \$80,000.

The Gulf Refining Co., Waterbury, Conn., will build a new oil distributing plant on South Fifth Street, to cost \$25,000.

## Philadelphia

PHILADELPHIA, Nov. 27.

ROBERT M. GREEN & SONS, 1413 Vine Street, Philadelphia, manufacturers of soda fountains and fixtures, have acquired the five-story factory at 1413-21 Vine Street, and a three-story plant on Pearl Street, for \$200,000. A three-story factory, 1426-30 Wood Street, has also been purchased

for \$23,800, to be used for extensions. R. M. Green, Jr., heads the company.

The Hurley Motor Co., 219 North Broad Street, Philadelphia, has purchased the three-story building, 40 x 100 ft., at 227-29 North Broad Street, for \$250,000, for new headquarters and works. J. Scott Hurley is head.

The Baldwin Locomotive Works, Inc., 500 North Broad Street, Philadelphia, will make machinery replacements and install additional equipment to cost about \$200,000. Present steam-operated machinery will be replaced with electric-driven equipment. Tentative plans are under consideration for developing a portion of its property at Eddystone for the production of locomotive tenders, estimated to cost \$2,000,000 with machinery.

A refrigerating plant will be installed in the one and two-story meat-packing plant, 68 x 180 ft., to be erected at Front and Vernango Streets, Philadelphia, by Duffy Brothers, 3255 North Front Street, estimated to cost \$75,000. The Kuhn Engineering Co., 3058 North Eighth Street, is engineer.

The Foreign Trade Bureau of the Philadelphia Commercial Museum, Thirty-fourth Street, has received an inquiry from a company at Beirut, Syria, for mining equipment and from companies in Copenhagen and Yokohama for ice-manufacturing, refrigerating and printing machinery. Full information available upon request.

Herbert Brothers, 1540 Wood Street, Philadelphia, representatives for the Chandler automobile, have leased the five-story building, 55 x 160 ft., now in course of erection at 1409-11 North Broad Street, for a new service and repair works and local headquarters.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until Dec. 5 for 450 storage batteries for aircraft service at the Philadelphia aircraft factory, schedule 312; also for miscellaneous quantities of aluminum sheets, tubing and bars, and duralumin sheet and bars, schedule 322.

A vocational department will be installed in the new high school to be erected at Haddon Heights, N. J., for which \$300,000 in bonds is being arranged.

The National Biscuit Co., Tenth Avenue and Fifteenth Street, New York, will break ground at once for an eight-story and basement plant, 150 x 258 ft., on Glenwood Avenue, Philadelphia, to cost \$1,000,000, including equipment. A. G. Zimmerman, 85 Ninth Avenue, New York, is architect.

The Atlantic Refining Co., 3144 Passyunk Avenue, Philadelphia, has acquired a tract of land on the Schuylkill River, known as the Rambo farm, for extensions in its oil storage and distributing plant.

The Freeman Electric Co., 803 South State Street, Trenton, N. J., manufacturer of electrical products, has revised plans for a one-story unit at its proposed new factory at Mead and Prince Streets, including improvements in the present building. Bids will be asked early in the coming year. E. H. Freeman is president.

The Public Service Electric Co., Trenton, N. J., is arranging to discontinue regular operations at its Chauncey Street power plant, and will build an addition to its generating plant at Burlington to cost \$270,000 to handle service in this district, including a new transmission line. The Trenton power house will be retained for emergency operations.

A vocational department will be installed in the proposed new high school to be erected at Norristown, Pa., for which bonds for \$500,000, have just been voted. Plans are being drawn.

The Empire Tire & Rubber Co., North Clinton Avenue, Trenton, N. J., will build a one-story addition, 50 x 90 ft.

The Champion Blower & Forge Co., Harrisburg Pike and Charlotte Street, Lancaster, will commence the erection of a one-story addition, 60 x 145 ft., to cost \$25,000. It will be used as an assembling department, to replace a structure recently destroyed by fire.

The Berkshire Electric Co., Lancaster, Pa., has arranged for a bond issue of \$59,000, to be used in connection with additions and improvements.

The Keystone Auto Specialties Co., York, Pa., care of R. R. Markle, Spooner Building, Harrisburg, Pa., architect, has plans for a new four-story factory, 65 x 180 ft., to manufacture automobile equipment.

The Megargee Paper Mills, Modena, Pa., have acquired about 70 acres at Bristol, Pa., and will use a portion of the site for a new mill, including a power house, machine shop and other buildings, to cost more than \$200,000.

The Board of Education, Broad and Crosby Streets, Chester, Pa., will take bids about Dec. 15, for a two-story industrial school building at Eighth and Fulton Streets. Sanders & Young, 39 South Seventeenth Street, Philadelphia, are architects.

Miller Brothers, Carlisle, Pa., plan to rebuild their one-story machine and automobile repair shop, destroyed by fire Nov. 21. Machine tools and other equipment were demolished.

The Jonathan Coal Mining Co., Franklin Bank Building, Philadelphia, will build a one-story addition, 51 x 85 ft., to its coal washery at Auburn, Pa., including the installation of machinery. Improvements will also be made in the present plant.

The Metropolitan Edison Co., Reading, Pa., has been granted approval to acquire the York Haven Water & Power Co., and the York Haven Electric Transmission Co., both of York Haven, Pa., and will expend \$1,000,000 for extensions and improvements, to double approximately the present generating and distributing facilities.

A manual training department will be installed in the new high school to be erected at Narbeth, Pa., for which bonds for \$165,000 have been approved.

The Pennsylvania Power & Light Co., Allentown, Pa., has arranged for a bond issue of \$7,000,000, a portion of the proceeds to be used for extensions and improvements.

Jas. Pierpoint & Sons Co., Franklin Trust Building, Philadelphia, is in the market for a 100 or 150-kw. motor generator, 250 volts, d. c.; also for two short wall mining machines.

## Pittsburgh

PITTSBURGH, Nov. 27.

**B**USINESS in machinery and equipment in this district still is on a small scale and the trade derives its chief encouragement from negotiations under way rather than from orders booked. Prospective business is heavy and is increasing daily in the form of fresh inquiries, but placing of orders is exceedingly slow. The largest single machine tool order of the past week was for seven tools by the Pittsburgh Steel Co., Monessen, Pa., and represents a closing against an inquiry put out last June. Used, rebuilt or surplus Government tools lately have been appearing at prices which have spoiled more than one sale of new tools. The Pennsylvania Railroad has not yet closed against the tools and cranes it inquired for several weeks ago for its Conway shops, Freedom, Pa., and the explanation is that the appropriation for the purchase has not yet been authorized.

No further price changes are noted, but all talk is of further advances, notwithstanding that one of the principal reasons for such a movement, high materials costs, has been disappearing lately in lower fuel and iron prices.

The report about machine tools is applicable to cranes; there is much pending business, but few orders.

The H. D. Shawkey Motor Co., 5526 Penn Avenue, Pittsburgh, local representative for the Durant automobile, has acquired property at Penn and Pacific Avenues, East End, 100 x 200 ft., for a new service and repair building estimated to cost \$100,000.

The United States Engineer Office, Pittsburgh, will take bids until Dec. 20 for steel lock gates for Lock No. 1, Allegheny River, as per specifications on file.

The Hyde Murphy Co., Ridgway, Pa., manufacturer of planing mill products, has plans for a four-story addition, 60 x 90 ft., estimated to cost \$25,000 with machinery.

The Pennsylvania-Ohio Electric Co., New Castle, Pa., has arranged for a bond issue of \$750,000, a portion of the proceeds to be used for plant construction, additions and improvements.

Fire, No. 22, destroyed a portion of the foundry and pattern shop of the Vette Foundry & Machine Co., Mars, Pa., with loss estimated at \$40,000, including equipment. It is planned to rebuild.

The Young Roofing Mfg. Co., Pittsburgh, manufacturer of prepared roofing, occupying temporary quarters at 245 First Avenue, has plans for rebuilding its plant at Thirty-fourth Street and the Allegheny Valley Railroad, destroyed by fire several months ago. Additional machinery will be installed.

A manual training department will be installed in the high school to be erected at Springfield, Pa., for which bonds for \$200,000 have been approved.

The New Castle Electric Co., New Castle, Pa., has arranged for a bond issue of \$500,000, a portion of the proceeds to be used for extensions and improvements.

The American Refractories Co., Union Arcade, Pittsburgh, has acquired property at Lewistown Junction, Lewistown,

Pa., and plans the development of the site for refractory manufacture.

A vocational department will be installed in the new high school to be erected at Clairton, Pa., for which bonds for \$550,000, are being sold.

The Penn Public Service Co., Johnstown, Pa., is planning for an increase in capital from \$3,400,000 to \$5,000,000, a portion of the proceeds to be used for extensions and improvements. It will take over and merge the Armagh, Confluence, Boswell and Lumber City Electric companies and make a number of additions.

The Shriver Coal Co., Morgantown, W. Va., will enlarge its coal tippie and install additional machinery at its mine. The company has recently increased its capital to \$600,000. Everhart Bier is president.

The Charleston Paper Mfg. Co., Nitro, W. Va., has plans for a local mill to cost in excess of \$100,000. A plant will be remodeled and machinery installed.

The Ideal Corrugated Box Co., Jeannette Street, Parkersburg, W. Va., has plans for a two-story addition, 70 x 150 ft., to cost \$30,000, including equipment.

The Nightrack Mfg. Co., Huntington, W. Va., manufacturer of metal and wood specialties, is taking bids for a two-story and basement plant, 40 x 120 ft., to cost \$25,000. William F. Diehl, R. & P. Building, is architect. Thomas W. Harvey is president.

The Superior Block Coal Co., Morgantown, W. Va., recently organized, has acquired a tract of 200 acres of land in the Cass district, and will construct a steel tippie. Mining and electric power equipment will be installed. Harold S. Smith is head.

An ice and refrigerating plant will be installed in the five-story factory to be erected by the Imperial Ice Cream Co., Fairmont, W. Va., George W. Strong is president.

The Board of Education, Huntington, W. Va., is said to have a list of equipment in preparation for installation in the manual training department of a new school.

The Vulcan Coal Co., Lost Creek, W. Va., will make extensions and improvements in its plant to cost approximately \$100,000, including the installation of additional electrical equipment, conveying machinery, etc. John Quinn is superintendent in charge.

## Baltimore

BALTIMORE, Nov. 27.

**T**HE Air Reduction Co., Canadian Pacific Building, New York, will erect a plant at Fayette and Eleventh Streets, Baltimore, at a cost of \$150,000. Plans are being prepared by Francisco & Jacobus, architects, New York. N. E. Britton is construction engineer for the company.

The American Ice Co., Calvert Building, Baltimore, will take bids early in December for a new one-story plant, estimated to cost \$100,000 including machinery. G. Leslie Weir, 41 East Forty-second Street, New York, is architect.

G. D. Graveley, Richmond, Va., is organizing a company to construct and operate a plant at Nansemond, Va., for the manufacture of tractors and other agricultural equipment.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until Dec. 12 for 20 portable electric drills, and nine electric grinders, for the Mare Island Navy Yard, schedule 295; also for one armature coil winder and one motor-driven tapping machine for the Hampton Roads, Va., Navy Yard, and two armature coil winders and two motor-driven tapping machines for San Diego, schedule 310.

The Common Council, Woodmont, Md., is arranging a bond issue for the installation of a municipal electric lighting plant.

The Lexington Refrigeration & Storage Corporation, Baltimore, is planning for extensions in its ice plant and refrigerating system, 516 West Lexington Street, to cost \$300,000. J. F. Brinley is president.

The Chicago Nipple Mfg. Co., 1966 Southport Avenue, Chicago, manufacturer of iron pipe nipples, coils, bends, etc., plans the erection of a one-story addition to its branch plant at Baltimore, recently established, to be 90 x 100 ft. It is also extending operations at its Chicago works.

The Purchasing Clerk, Bureau of Engraving and Printing, Washington, will take bids until Dec. 1 for one air hammer drill.

The Purchasing Agent, Post Office Department, Washington, will receive bids until Dec. 4 for 50 pipe taps.

The Martin-Parry Corporation, York, Pa., manufacturer of commercial automobile bodies, has plans nearing completion for new works at Monument and Fallsview Streets, Baltimore, totaling about 12,000 sq. ft. of floor space, to be equipped for assembling.



The Security Cement & Lime Co., 116 West Washington Street, Hagerstown, Md., has completed plans for a one-story addition to its cement mill at Security, Md., to include the installation of additional equipment. John Porter is general manager; J. E. Ferguson & Co., 43 North Jonathan Street, Hagerstown, are engineers.

D. H. Irwin, Box 1133, Raleigh, N. C., has inquiries out for machine tools, new or used, in good condition, and other equipment for installation in a local machine shop, including drill press and drills; lathe for threading service; small forge, with blower; power shears for angles, bars, etc.

A manual training department will be installed in the new two-story high school, 100 x 200 ft., to be erected at Claymont, Del., for which bonds for \$275,000 have just been sold. Coffin & Coffin, 522 Fifth Avenue, New York, are architects.

The Bureau of Yards and Docks, Navy Department, Washington, has plans in preparation for the installation of electric elevator cranes at the Puget Sound Navy Yard, Seattle, Wash., specification 4755.

The Carolina-Tennessee Power Co., Murphy, N. C., has preliminary plans under way for a new hydroelectric generating plant with capacity of 60,000 hp., estimated to cost \$6,000,000, including transmission system.

The Herfurth Engine & Machinery Co., Alexandria, Va., machinery dealer, has inquiries out for a used 100-hp. engine, oil-operated, in good condition.

The McCooks Machine Works, 906 East Cary Street, Richmond, Va., is planning for the installation of additional tools, including a lathe, drill press, bench tools, etc.

The Wilson-Hock Co., City Point, Va., machinery dealer, has inquiries out for equipment for mica grinding machinery, complete outfit, about 75-mesh; also for a rotary dryer, 7 ft. in diameter, 90 ft. long, with auxiliary operating apparatus.

Colson & Co., Elyria, Ohio, manufacturers of juvenile vehicles, wheels, etc., have leased the four-story building at 116 South Eutaw Street, Baltimore, for a factory branch.

The Quartermaster, United States marine barracks, Quantico, Va., will take bids until Dec. 4 for one spring balance scale, as per specifications on file; also, will open bids (date not stated) for universal connecting rods alignment jig and motor tester.

The Shambow Shuttle Co., Greenville, S. C., has plans for a one and one-half story addition, 70 x 300 ft., to cost \$75,000, including machinery. Equipment will include a mechanical conveyor system, overhead and floor track type. John Shambow is president.

## Buffalo

BUFFALO, Nov. 27.

A ONE-STORY addition to its generating plant on Webster Street is planned by the Tonawanda Power Co., Sweeney Building, Tonawanda, N. Y., to cost \$150,000 with machinery.

The American Kardex Co., Tonawanda, N. Y., manufacturer of office filing equipment and devices, has engaged Louis Eggert, 35 Elmwood Avenue, architect, to prepare plans for a two-story addition, 50 x 160 ft., to cost \$70,000 including equipment.

The Northwestern Motors Co., Erie, Pa., is planning to rebuild its plant, destroyed by fire Nov. 18 with loss reported in excess of \$175,000.

H. Sutter, 428 Erie Street, Elmira, N. Y., is arranging for the installation of equipment in a local building for the manufacture of radio equipment and parts.

A manual training department will be installed in the new high school at Mount Morris, N. Y., estimated to cost \$100,000, for which C. A. Foote, 32 Murray Street, architect, has been engaged to prepare plans.

The Eastman Kodak Co., Kodak Park, Rochester, N. Y., has tentative plans in preparation for a new refrigerating machine plant. C. K. Flint, company address, is architect.

Power equipment, transmission and other mechanical equipment will be installed in the proposed flour milling plant to be constructed by the Island Warehouse Co., Ganson Street and the Ship Canal, Buffalo, estimated to cost \$200,000.

The Bancroft-Jones Corporation, Buffalo, manufacturer of sectional steel buildings, contemplates the installation of a repair and parts department in a one-story building, 60 x 120 ft., to be erected at Urban and Fougerson Streets.

An ice-manufacturing plant, 65 x 80 ft., and 30 x 60 ft., with power house, 30 x 65 ft., will be erected by the Culliton Ice Cream Co., Buffalo, at Halbert and East Jewett Streets. All departments will be electrically operated. E. H. Culliton is president.

A manual training department will be installed in the two-story high school to be erected at Phelps, N. Y., estimated to cost \$150,000, for which Foote & Carpenter, 154 East Avenue, Rochester, N. Y., architects, will prepare plans.

## Chicago

CHICAGO, Nov. 27.

THE Chicago, Burlington & Quincy is at the point of closing on the remainder of its general machine-tool list and the inquiry for its Denver shop. It is probable that orders will be placed before Dec. 1, and if such be the case, November total sales for local dealers will compare favorably with those for October. The railroad will not place its Eola scrap yard equipment until later. Machine tool business from general sources is diminishing, although here and there a few sizable orders are developing. The general tendency of buyers, however, is to postpone purchases until after taking inventory.

The Beloit Iron Works, Beloit, Wis., has closed for a 48-in. x 48-in. x 12-ft. planer, and an 84-in. vertical boring mill. The Studebaker Corporation, South Bend, Ind., has placed orders for four sizable turret lathes. The Stewart-Warner Speedometer Corporation, Chicago, recently purchased considerable power press equipment, including 16 presses from one maker. Greater activity in tool and die shops is evidenced by inquiries for additional equipment. An interesting development is an inquiry for grinding equipment to grind terra-cotta building blocks. The Maximotors Corporation, a new company located at Muskegon, Mich., has been canvassing local machine tool houses for machine tools.

The Foster Machine Co., Elkhart, Ind., manufacturer of turret lathes and hand screw machines, has advanced prices 10 per cent effective Dec. 1.

The Gopher Machine Mfg. Co., manufacturer of power farming machinery, New Prague, Minn., has issued the following list:

- One hand-feed box board matcher.
- One punch, capacity 1-in. hole in  $\frac{3}{4}$ -in. iron, depth of throat, 6 in. or more.
- One tool grinder for general toolroom work.
- One twist drill grinder.
- One tapping machine, capacity 18 gage.
- One Warner & Swasey, Foster, Millholland or similar turret lathe, with 3-jaw chuck, capacity about  $1\frac{1}{2}$  in. x 12 in.
- One 24-in. back-geared power feed drill press.
- One multiple-spindle wood boring machine, table 5 to 8 ft. long, 8 to 12 spindles.
- One single spindle, or combined vertical and horizontal, wood boring machine.
- One wood bending machine, Defiance 9-in. single arm or similar, for bending bobsled runners.
- One wood steaming retort 84 in. long or over.
- One power rivet spinner,  $\frac{1}{4}$ -in. capacity.
- One power punch, quick stroke, for light sheet metal work.
- One 30-hp., one 25-hp., one 15-hp., one 10-hp., three 5-hp., 60-cycle a. c. motors.

H. Von Holst, 112 West Adams Street, Chicago, is preparing plans for a large repair shop at Homan Avenue and Division Street, for the Peoples Gas Light & Coke Co., to cost \$300,000.

The Adams Pattern & Foundry Co., 6250 South Halsted Street, Chicago, has let contract for a one and two-story foundry building, 24 x 98 ft. and 37 x 125 ft., at 2732-44 West Thirty-sixth Place, to cost \$25,000.

The Aurora Shade Machinery Co., Aurora, Ill., recently incorporated with \$20,000 capital stock, is not a new company, but a partnership which has changed its form of organization to a corporation. The company manufactures window shade machinery and shade shop accessories. Expansion in buildings or equipment is not contemplated at this time.

The Elkay Mfg. Co., 606-08 North Sangamon Street, Chicago, recently incorporated with \$15,000 capital stock, has been in business since January, 1920, but was not incorporated until Nov. 17, 1922. It manufactures sheet metal and sheet metal products. No expansion in manufacturing space or equipment is contemplated at present.

The Union Pacific System, Omaha, Neb., has authorized the construction of new shops and yard facilities at Los Angeles, Cal., to cost \$1,750,000. The improvements will include an engine-house, locomotive shops, freight car shops, coach shops and a coach yard. It is proposed to start construction at once.

The Rockford Cabinet Co., Rockford, Ill., has let contract for a four-story addition, 128 x 202 ft., to cost \$250,000.

The Crouse Pump Co., Wichita, Kan., has started the construction of a foundry, 60 x 70 ft., to cost \$20,000.

The Knapp Brothers Mfg. Co., manufacturer of metal

specialties, 2419 West Fourteenth Street, Chicago, has bought a site, 120 x 500 ft., on the east side of Cicero Avenue, 180 ft. north of Fourteenth Street, and will erect a one-story factory, 75 x 400 ft., to cost \$100,000.

The Service Caster & Truck Co., Kansas City, Mo., manufacturer of steel roller bearing casters, will move to Albion, Mich., where the Chamber of Commerce will erect a plant for its use.

The People's Gas Light & Coke Co., 122 South Michigan Avenue, Chicago, has preliminary plans under way for a two and three-story meter and repair works at Homan and Division Streets, estimated to cost \$300,000, including machinery. H. Von Holst, 112 West Adams Street, is architect.

The National Copper & Steel Tank Works, Chicago, has acquired a new one-story building, 75 x 125 ft., at 455-61 North Artesian Avenue, and will occupy the structure following the installation of machinery.

The Westinghouse Electric & Mfg. Co., East Pittsburgh, has broken ground for the first unit of new branch works on West Pershing Road and Leavitt Street, Chicago. The complete plant will be seven-stories, 240 x 500 ft., estimated to cost \$2,000,000 with machinery.

The Gophers Machine & Mfg. Co., New Prague, Minn., has plans under way for a one-story machine shop.

A vocational department will be installed in the three-story junior high school to be erected at Jamestown, N. D., estimated to cost \$300,000. Shannon, Boyd & Boyd, Jamestown, are architects.

The Interstate & Foreign Trade Department, Chicago Association of Commerce, 10 South La Salle Street, Chicago, has received an inquiry from a company at Mazatlan, Mex., for motor wheels for bicycles (No. 1703).

The Great Northern Railway Co., St. Paul, Minn., has tentative plans under consideration for the construction of an engine house and repair shops at St. Cloud, Minn.

The Interstate Iron & Steel Co., 104 South Michigan Avenue, Chicago, is in the market for a No. 3 Medart bar straightener for immediate delivery.

## Detroit

DETROIT, Nov. 27.

**BARNES-GIBSON-RAYMOND, INC.**, was incorporated Nov. 1 under Michigan laws, with a capital of \$500,000, to manufacture springs at 6400 Miller Avenue, Detroit. The company purchased the complete plant of the Zenith Foundry Co., erected two years ago, and has salvaged the equipment and is remodeling the property to suit its manufacturing needs. Contracts for equipment have been placed and it is planned to begin operations shortly after the first of the year. Officers of the company are Fuller F. Barnes, president; F. M. Raymond, vice-president; F. E. Whittlesey, secretary; A. B. Peterson, treasurer; Lyman D. Adams, assistant treasurer and general manager; W. J. Black, assistant secretary and sales manager.

The Advance Stamping Co., Detroit, has been incorporated under State laws with a capitalization of \$25,000 to manufacture stamped metal goods, sheet metal products, etc. The company is represented by W. S. McDowell, 1012 First National Bank Building, where temporary offices will be maintained until the factory space in the Grand Trunk Building on Twelfth Street is ready for occupancy. Roy W. Young is president of the new company.

The Eagle Spring Bumper Co., Detroit, has been incorporated with a capital of \$50,000 to manufacture automobile bumpers and kindred equipment. The company is operating at 93 Adelaide Street, Detroit, producing bumpers only at the present time. Officers of the company are Harry Caplan, president; M. Caplan, vice-president, and Barnett White, secretary and treasurer.

The United Auto Parts Co., Flint, Mich., has been incorporated with a capital of \$30,000 to manufacture automobile parts and equipment. Incorporators are Joseph F. Zimmerman, William J. and Harold R. Burns, 1303 North Saginaw Street, Flint.

Plans are under way for rebuilding the plant of the Monroe Body Co., Ludington, Mich., destroyed by fire Nov. 13 with loss of \$150,000. B. F. Monroe is president of the company.

The Paragon Recoil Snubber Co., Muskegon, Mich., has been incorporated with a capital of \$10,000 to manufacture shock absorbers and other automobile parts. Incorporators are James W. McNabney, Oley R. Fountain and George E. Craig, 92 West Webster Avenue, Muskegon.

The Ackerman-Blaesser-Feezey Co., Inc., Detroit, has been incorporated with a capital of \$30,000 to manufacture automobile parts and kindred equipment. Incorporators are C. E. Blaesser, C. T. Feezey and E. L. Ackerman, 1167 Longfellow Avenue, Detroit.

The Eagle Aeroplane Corporation, Detroit, has been incorporated with a capital of \$25,000 to manufacture mechanical toys, aircraft devices, etc. Incorporators are George Shield and A. S. Barkley, 1587 Spruce Street, Detroit.

The Michigan Valve & Foundry Co., successor to the business of the Flower Valve & Mfg. Co., Detroit, is purchasing some new equipment to facilitate production in its foundry and machine shop.

S. W. Raymond, distributor for Ford products at Adrian, Mich., announces that the Ford company will erect a parts plant in that city shortly after the first of the year. A site has been selected on the Detroit, Toledo & Ironton Railroad and the new enterprise will employ 30 or 40 men.

The Motor Pattern & Machine Co., Ford City, Mich., has been incorporated with a capital of \$10,000 to manufacture patterns and special equipment. The plant is located on Labadie Street, and has been in operation since Oct. 15. Officers of the company are L. J. Feltes, president; J. J. Marks, general manager; C. A. Brady, secretary and treasurer.

The Detroit Approved Spring Co. has been incorporated to manufacture a new type of rear spring for Ford cars. It is a subsidiary of the Huebner Mfg. Co., of which Julius J. Huebner is general manager. Offices are at 5531 Woodward Avenue.

The Service Caster & Truck Co., Kansas City, Mo., will remove to Albion, Mich., where a site has been secured near the plant of the Albion Malleable Iron Co. A factory, 50 x 200 ft., will be erected for the manufacture of roller-bearing truck castings.

The Consumers Power Co., Iron Mountain, Mich., has purchased 700 acres in Dickinson County, which include 80 acres containing the waterpower site known as Sturgeon Falls, on the Sturgeon River, and will build a power plant which will generate 1000 hp.

The Detroit Edison Co., 2000 Second Street, Detroit, will erect a two-story power house on Pisger Street, to cost \$125,000.

Fire, Nov. 15, destroyed the distributing plant of the Huron Portland Cement Co., Atwater and Riopelle Streets, Detroit, with loss estimated at \$250,000, including equipment and stock. It is planned to rebuild.

The Ford Motor Co., Highland Park, Mich., has tentative plans for a new assembling plant, 300 x 1500 ft., in the vicinity of St. Louis, estimated to cost \$2,000,000 with machinery.

The Petoskey Portland Cement Co., Petoskey, Mich., has preliminary plans under way for additions and improvements estimated to cost \$500,000, including equipment. J. C. Buckbee, First National Bank Building, Chicago, is consulting engineer.

The Detroit Lubricator Co., 5938 Trumbull Street, Detroit, has awarded a contract to the Everett Winters Co., Book Building, for a two-story power house, estimated to cost \$26,000.

The Kelso Mfg. Co., Detroit, Mich., has been incorporated with a capital of \$25,000 to manufacture automobile equipment and parts. Incorporators are D. G. MacMillan and P. M. Gelatt, LaCrosse, Wis., and J. P. Kelso, 1208 Kresge Building, Detroit. The last noted represents the company.

Waderlow Brothers, Inc., Detroit, Mich., has been incorporated with a capital of \$30,000 to manufacture mechanical equipment. Incorporators are Frank Walters, Charles A. and Benjamin A. Waderlow, 4470 Helen Avenue, Detroit. The latter represents the company.

The Central Paper Co., Muskegon, Mich., has awarded contract to the Markle Cement Co., Muskegon, for two-story, three-story and four-story mills, 45 x 150 ft., 42 x 55 ft. and 46 x 90 ft., respectively, and a three-story machine department, 55 x 300 ft., estimated to cost \$200,000.

The Rickenbacker Motor Co., Detroit, has acquired the former plant of the Detroit Steel Co., and will remodel the structure for early occupancy. It will provide a total floor area close to 500,000 sq. ft. A one-story addition will also be erected to cost \$12,000.

The Commonwealth Light & Power Co., Ludington, Mich., has acquired the White River Power & Light Co., Whitehall, Mich., and will make extensions and improvements, including the hydroelectric power plant on the White River.

In connection with extensions and improvements at its car shops at Ludington, Mich., the Pere Marquette Railroad Co., Detroit, will build a new car shop, for rebuilt cars, 100 x 160 ft.

The City Clerk, Monroe, Mich., will take bids until Dec. 11 for equipment for the new pumping plant at the municipal waterworks, including steam turbine-driven electrical generator, two 150-hp. watertube boilers, pumping machinery, one hand-power traveling crane, etc. Hoad, Decker,



Shoecraft & Drury, Ann Arbor, Mich., are consulting engineers.

The Northwest Engineering Co., Green Bay, Wis., is in the market for an 8-ft. vertical boring mill of standard make and in good condition.

## Milwaukee

MILWAUKEE, Nov. 27.

**D**EMAND for machine tools has developed a spotty character and needs show a more miscellaneous tone. The past week's sales compare well with the average of the previous weeks, giving November a volume at least equal to October, with some interests reporting a probable increase. Prospective buyers are watching price developments closely. Experience demonstrated that recent advances on machine tools did not have the effect of driving buyers into the market. Purchases remain confined to barest necessities and there is no freedom about buying. December is expected to be about as active as October and November, but high hopes are held out for an active demand after Jan. 1 and completion of inventories.

The Kieckhefer Container Co., Milwaukee, manufacturer of fiber and wooden boxes and packages, is preparing to build a new fiber box plant estimated to cost \$750,000 to \$800,000, including equipment, at Delair, near Camden, N. J., to supplant factories operated there for three years in leased buildings. A trust deed to secure an issue of \$2,000,000 first mortgage bonds has been given the First Wisconsin Trust Co., Milwaukee. Half of the issue only will be marketed at present and already has been absorbed. John W. Kieckhefer, Milwaukee, is president and general manager.

The Welch Investment Co., 417 Brumder Building, Milwaukee, has plans by Henry C. Hengels, architect, 445 Milwaukee Street, for two additional stories on the present automotive sales and service building at 704-708 Grand Avenue, occupied by the Netter-Heiser Co., Ford dealer. One floor will be equipped as a machine and repair shop.

The All-American Metallic Casket Corporation, Cicero, Outagamie County, Wis., has been organized with a capital stock of \$50,000 and is starting work on the construction of a plant at Nichols, near Appleton, Wis. The incorporators are J. A. Burrichter and Edward A. Walters, St. Paul, Minn., and F. H. Tandy, Nichols. The general contract for building and equipping the factory has been let to Mr. Walters.

The Milwaukee Gas Specialty Co., 2017 Clybourn Street, Milwaukee, is taking bids until Dec. 1 for a machine shop addition, 45 x 112 ft., one story and basement, designed by Leiser & Holst, architects, 105 Wells Street. With new equipment the improvement will cost about \$40,000. Otto F. Pfeil is secretary-treasurer.

The Royal Fixture Corporation, Milwaukee, has been incorporated with a capital stock of \$50,000 to manufacture electric illuminating fixtures, lamps, electrical devices, etc. A building at 85-87 Thirty-fifth Street has been taken over and is being equipped as a machine and assembling shop. The principals are David C. Loppin, 679 Forty-eighth Street and Sam Rabuchin, 844 Eleventh Street, Milwaukee.

The Motor Castings Co., 425 Fifty-sixth Avenue, Milwaukee, has increased its capital stock from \$10,000 to \$20,000 for enlargement of its gray iron shop.

The Hansen Canning Machine Corporation, Port Washington, Wis., has accepted plans for a brick and steel machine shop, 110 x 120 ft., for the production of special machinery for fruit and vegetable packing plants. The investment will be about \$75,000.

The Village Board of Kennan, Wis., has engaged Earl D. Jackson, consulting engineer, 400 Endicott Building, St. Paul, Minn., to design a municipal hydroelectric light and power plant, with steam generating auxiliaries. Construction will start early in 1923. The estimated cost is \$35,000.

Robert Wark & Co., Inc., Clinton, Wis., is a new \$10,000 corporation organized by Robert Wark, F. W. Herron and William O. Thomas, to manufacture septic tanks, chemicals, storage tanks, etc. The Stone building at Clinton has been leased for a long term and is now being equipped. Forty men will comprise the initial working force. Mr. Wark formerly was associated with the Koustine Co., sanitary engineers, Buffalo, N. Y.

The William M. Boenning Mfg. Co., Manitowoc, Wis., has been incorporated with a capital stock of \$25,000 as the development of a business established recently by William H. Boenning for the manufacture of automotive equipment, principally shock absorbers, signals, etc. T. F. and G. H. Mackmiller are associated in the new corporation.

The Board of Education, Appleton, Wis., has determined

upon sites for the new east and west side junior high and vocational training schools, to be erected at an estimated cost of \$175,000 each. Fourteen architects are preparing competitive plans. It is hoped to be ready to let contracts by Jan. 1.

The Helzen Corporation, Milwaukee, has been incorporated by Lester Schick, 396 Layton Avenue, H. Otto and Richard J. Hennessey, attorney, to manufacture mechanical appliances. The capital consists of \$30,000 preferred stock and 3000 shares of no-par value common shares. It is proposed to establish a machine shop at once, but details are not yet available.

The Perfection Mfg. Co., Milwaukee, has been granted a State charter to manufacture automotive accessories, equipment, parts, specialties and devices. The capital stock is \$25,000 and the incorporators are Joseph L. Schmidling, 1738 Eighth Street, E. L. Kuebner and Edward A. Sprogg. A small shop established recently will be considerably enlarged.

The Whiting-Plover Paper Co., Plover, Wis., has let contracts for a beater room addition, 30 x 108, three and four stories of brick and steel construction. Specifications for equipment are being completed by L. A. DeGuere, consulting engineer, Wisconsin Rapids, Wis. E. A. Oberweiser is general manager of the mill.

Articles of incorporation were filed Nov. 23 by the Wetmore-Gibbons Co., Milwaukee, organized with 2000 shares of no-par value common stock to manufacture and furnish mechanical engineering advice for developing inventions of mechanical appliances and devices. The incorporators are C. P. Wetmore, head of the Wetmore Mechanical Laboratories Co., A. C. Gibbons and Dean Farley. The production of precision tools is intended to be undertaken shortly.

## Cleveland

CLEVELAND, Nov. 27.

**T**HE local machine market continues fairly active.

Some good sized orders were placed during the week and dealers report considerable activity in small orders ranging from single machines to lots of three or four tools. Some manufacturing plants are adding considerable equipment by buying two or three machines at a time and scattering their purchases over an extended period. During the week the Standard Tool Co. purchased 14 Pratt & Whitney automatic lathes, and the Grabler Mfg. Co., Cleveland, bought 16 electrically driven grinding machines. The Hoover Suction Sweeper Co., Canton, Ohio, purchased about 15 machines. The National Screw & Tack Co., Cleveland, which will build an extension, purchased several tools and is expected to be in the market for considerable additional equipment. The Continental Motors Corporation, Detroit, placed two gang drills with a Cleveland dealer. Some small lot machinery orders are coming from the motor truck industry.

Most dealers report that their November sales will show some gain over October. About the usual lull is expected in December, but machine tool builders are working on a number of good prospects and look for considerable activity in January. Dealers in some cases are being asked to make new quotations on machines inquired for several months ago but not yet purchased.

The Columbian Hardware Co., Cleveland, has purchased the equipment and inventory of the Cleveland Drop Forge Co., which will be removed to its present plant. The site occupied by the forge company has been purchased by the W. S. Tyler Co., which occupies adjoining property. The acquired equipment includes 35 hammers and two headers. The Columbian company will engage in a general commercial drop forging business, in addition to the manufacture of its regular line of products, which includes vises and anvils. The Cleveland Drop Forge Co. was organized a few years ago and took over the Cleveland plant of the Wyman & Gordon Co. The men who have been largely interested in the company will have a small stock holding interest in the Columbian Hardware Co. and will have one representative on the board of directors of the latter company. The Columbian Hardware Co. was organized about two months ago by its president, H. F. Seymour, who purchased the plant of the Consolidated Iron & Steel Co., of which he was vice-president.

The E. Konigslow Stamping & Tool Co. has been incorporated and will carry on the business heretofore conducted under the name of the E. Konigslow Stamping & Tool Works. The new officers are H. F. Stuhr, president; F. S. Fraser, vice-president and treasurer, and O. W. Charles, secretary.

The company will be compelled to give up its present site which will be required in the erection of the new Union passenger station and is looking for new quarters with approximately 12,000 sq. ft. of floor space.

The Hoover Suction Sweeper Co., Canton, Ohio, has increased its capital stock from \$2,000,000 to \$6,000,000 and a new organization will be effected under the name of the Hoover Co. The capital stock has been increased with a view of enlarging the manufacturing facilities and in engaging in the production of other electrical household appliances.

The Seneca Wire & Mfg. Co., Fostoria, Ohio, is building an extension to its plant.

The Ohio Match Co., Wadsworth, Ohio, will erect a three-story addition, 120 x 200 ft.

The Advance Foundry Co., Dayton, Ohio, is in the market for a 10 to 15-ton electric crane, 40-ft. span; also for modern equipment.

## Cincinnati

CINCINNATI, NOV. 27.

**A**FTER a poor start, the month of November is shaping up very well for machine tool manufacturers and in the past few days some fair-sized orders were booked in this vicinity. The Pennsylvania Railroad bought a number of the tools recently inquired for, although formal orders have not been issued. The Chicago & Northwestern has purchased at least four lathes, and the Pere Marquette a similar number, both orders being placed with Cincinnati manufacturers. The National Cash Register Co., Dayton, Ohio, bought two centerless grinders, and the New Advance Machine Co., Van Wert, a drill and lathe. The Standard Sanitary Mfg. Co. purchased a multiple spindle drill, costing approximately \$10,000, for its Louisville plant, and the Ford Motor Co., for its Hamilton, Ohio, plant placed orders for two more Bullard Mult-au-Matics and a Springfield grinder, the three machines approximating \$30,000. The Cincinnati & Ohio will likely close a list of six tools this week, a tentative order having been placed with a local manufacturer for part of this equipment.

A local manufacturer of turret lathes reports business increasing greatly, and the past week booked a single order for six machines. So heavy has been the increase in the demand for turret lathes that this manufacturer has added 50 men to its force the past two weeks. The Connersville Blower Co., which recently booked a large order for equipment for a by-product coke plant, has purchased a large press and is about to close on a 90-in. lathe, the new equipment being necessary to produce parts required on the order. The Ansted Engine Co., Connersville, Ind., builder of automobile engines, has about closed a contract for 18,000 engines and clutches, and will need several new machines to round out shop equipment. The Packard Motor Car Co. is also in the market for miscellaneous equipment for its Detroit plant. Frog and switch companies are running full time on industrial and mining work and have been buying tools, principally planers. Textile and electrical manufacturers have also been fair buyers.

Turret lathe manufacturers have again advanced prices, the increase averaging 15 per cent. This makes an average increase of approximately 27 per cent since last spring. Other manufacturers are expected to follow.

The Otis Elevator Co. will install the new elevators in the Hotel Gibson, Cincinnati, the contract price being \$80,000.

The Belfont Iron Works Co., Ironton, Ohio, producer of pig iron and manufacturer of nails and wire, has taken bids on a building to house a slag crushing machine.

The Zinc & Spar Co., Livingston, Ky., has been incorporated with a capitalization of \$75,000 for the production of zinc-oxide and fluorspar. Wheeling, W. Va., capital is interested. D. G. Hearne is general manager at Salem, Ky.

The Crawford, McGregor & Canby Co., Dayton, Ohio, manufacturer of golf clubs, will add two floors to its plant on Albany Street, to cost \$50,000.

The Ohio River Sand Co., Louisville, Ky., has under construction a steel-framed, electrically operated sand hoister at its plant on First Street. The hoister will cost approxi-

mately \$100,000 and will replace steam-driven machinery at present in use.

The Louisville Garage Co., Louisville, Ky., will shortly commence the erection of a garage and service station on Fifth Street, to cost \$100,000. Lee L. Miller is president.

## The Gulf States

BIRMINGHAM, NOV. 27.

**T**HE Calcasieu Mfg. Co., Elizabeth, La., recently organized with a capital of \$2,000,000, is perfecting plans for the erection of a first unit for a new paper mill. A by-products plant for rosin and pine oil extraction will also be built. The new mill will cost in excess of \$500,000, with machinery. J. F. Carter is general superintendent.

A manual-training department will be installed in the new high school to be erected at Tulia, Tex., for which bonds for \$100,000 have been sold. Plans are being drawn.

The Common Council, Centerville, Ala., is planning for the installation of a pumping plant, in connection with a new waterworks system. A bond issue will be arranged.

The Quartermaster Department, United States Army Supply Base, New Orleans, is said to be planning to rebuild the machine shop at the mechanical department, recently destroyed by fire.

The Abilene Light & Power Co., Abilene, Tex., has acquired the Roby Light Co., Roby, Tex., and the Rotan Light Co., Rotan, Tex. The properties will be merged and extensions and improvements made in the plants and systems, including the installation of new power houses at Roby and Rotan.

The Louisiana Celotex Co., New Orleans, La., operating a local mill for the manufacture of fiber board products from waste sugar cane, has plans under way for two new units to more than double the present capacity. The expansion will cost close to \$1,000,000, including machinery. B. G. Dahlberg is president.

The National Carbon Co., Madison Avenue, N. W., and 117th Street, Cleveland, manufacturer of electric batteries and kindred specialties, is said to have tentative plans for the establishment of a new service and factory branch at Dallas, Tex.

The Gulf State Land & Lumber Co., Coushatta, La., is planning for the installation of electrical equipment and other machinery at its plant.

A manual-training department will be installed in the proposed high school at Albany, Ala., two stories and basement, to cost \$125,000, for which bids will be called about the middle of December. William B. Ittner, Board of Education Building, St. Louis, is architect.

The American Oil Co., Tulsa, Okla., has plans nearing completion for a new refinery at Pioneer, Tex., to have an initial capacity of 2500 bbl. per day. T. J. Ryan is president.

A manual-training department and laboratory will be installed in the new one-story high school buildings on Eighth Avenue, Birmingham, to be erected by the Birmingham-Southern College Trustees, estimated to cost in excess of \$175,000.

The City Commission, Terrell, Tex., is planning for the installation of additional machinery at the municipal power house, including engine, electric apparatus, etc.

The Buffalo Refining Co., Sherman, Tex., recently organized, has acquired the local plant of the Buffalo Products & Refining Co., with capacity of approximately 400 bbl. per day. Plans are under consideration for enlargement and the installation of additional machinery.

## Indiana

INDIANAPOLIS, NOV. 27.

**T**HE Baltimore & Ohio Railroad Co., Baltimore, has tentative plans under consideration for new locomotive shops at Gary, Ind., estimated to cost \$425,000, including new freight houses to be located on an adjoining site.

The Union Traction Co., Anderson, Ind., is planning the erection of an addition to its local central power plant, estimated to cost \$200,000, including machinery.

The Republic Creosoting Co., 1614 Merchants Bank Building, Indianapolis, will build a new pumping plant at its works at Maywood. New stills, condensers and other mechanical equipment will be installed. Batchelder & Scales, 426 Board of Trade Building, are architects.

J. J. Briggs, 3323 Park Avenue, Indianapolis, has concluded negotiations with the Common Council, Seymour, Ind., for the purchase of a local site for a new plant to manufacture stucco and concrete products. Plans will be prepared



at once and machinery ordered. Arrangements have been made to secure raw material from deposits at Bedford and Mitchell, Ind.

The City Council, Auburn, Ind., has completed plans for a one-story addition to the municipal electric power plant to cost \$60,000. E. E. Weinland is manager.

The Lewis E. Myers Co., Valparaiso, Ind., manufacturer of office furniture and equipment, has acquired adjoining property, factory of Pitkin & Brooks. The new owner will remodel and improve the structure and install machinery.

The Globe-Bosse-World Furniture Co., Evansville, Ind., has commenced the erection of a one-story addition, 45 x 160 ft. A list of equipment will soon be arranged.

The Evansville Enameling Co., Fulton Street, Evansville, Ind., will take bids early in December for a one-story addition to cost \$20,000. Russ & Karges, Furniture Building, are architects.

## The Central South

St. Louis, Nov. 27.

THE Illinois Central Railroad Co., 135 East Eleventh Place, Chicago, has plans under way for a one-story addition to the machine shop at its Jackson, Tenn., repair shops, 75 x 200 ft.

A manual training department will be installed in the four-story junior high school to be erected at Kansas City, Kan., estimated to cost \$250,000. Rose & Peterson, 434 Brotherhood Block, Kansas City, are architects.

The Hannibal Railway & Electric Co., Hannibal, Mo., is arranging for a bond issue of \$150,000, a portion of the proceeds to be used for extensions and improvements.

The Standard Sanitary Mfg. Co., Bessemer Building, Pittsburgh, will break ground at once for a one-story addition, 56 x 325 ft., at its plant at Sixth and Shipp Streets, Louisville, estimated to cost \$75,000.

The Mengel Body Co., Louisville, recently organized under New Jersey laws with capital of \$1,000,000, by officials of the Mengel Box Co., Dumesnil and Eleventh Streets, has plans in preparation for an automobile body manufacturing plant at Fourth and G Streets, comprising a 30-acre site, lately acquired. It will include a power house, machine shop and other mechanical departments, aggregating 200,000 sq. ft. of floor space, and will cost in excess of \$500,000, with machinery. Joseph & Joseph, Francis Building, are architects.

The North Missouri Power Co., Brookfield, Mo., is having plans drawn for extensions and improvements in its electric power plant, to cost \$150,000, including machinery.

The Colonial Supply Co., Henryetta, Okla., manufacturer of oil well supplies and equipment, plans the establishment of a one-story machine shop and branch works at Weleetka, Okla.

G. T. Braden, Tulsa, Okla., is organizing a company to build and operate an oil refinery at Perry, Okla., estimated to cost \$75,000.

The St. Louis & Southwestern Railroad Co., St. Louis, has tentative plans for additions to its car and locomotive shops at Pine Bluff, Ark. The work will be carried out during the coming year in connection with an expansion and improvement program estimated at \$2,000,000.

The Consumers' Light & Power Co., Ardmore, Okla., has preliminary plans under way for a new ice and cold storage plant, estimated to cost \$100,000 with machinery.

The Crouse Clear Vision Gasoline Pump Works, Inc., 822 East Harry Street, Wichita, Kan., is planning for a new two-story foundry, 60 x 75 ft., for the manufacture of pump castings, estimated to cost \$25,000. Emery Crouse is president.

The DeKalb County Electric Light Co., Maysville, Mo., has perfected plans for a new power house, 50 x 70 ft., estimated to cost \$75,000. O. L. Wright is president.

Officials of the Andrews Steel Co. and the Newport Rolling Mills, Inc., Newport, Ky., affiliated, have organized the Globe Iron Roofing & Corrugating Co., under Delaware laws, to manufacture steel and iron roofing and kindred products. Joseph B. and W. N. Andrews head the company, which has an initial nominal capitalization of \$20,000.

The Oklahoma Portland Cement Co., Ada, Okla., will build an electric power plant for service at its mills at Ada and Lawrence, Okla. Other improvements will be made. Charles Boettcher is president.

The Tennessee Electric Power Co., Chattanooga, Tenn., is arranging an expansion and improvement program for the coming year, to include the construction of a third unit at its hydroelectric power plant at Rock Island, Tenn., the erection of an auxiliary steam-operated generating plant, new transmission lines, substations, etc. The work will involve \$5,000,000. B. C. Edgar is vice-president and general manager.

A manual training department will be installed in the two-story and basement high school to be erected at St. Charles, Mo., estimated to cost \$245,000, for which bids on a general contract will soon be asked. William B. Ittner, Board of Education Building, St. Louis, is architect.

The Litton Veneer Co., Rockford, Ill., will build a new branch plant on Nettleton Street, St. Louis, to include a one-story power house. B. B. Bertram is manager.

The Common Council, Fulton, Mo., will commence the construction of a one-story municipal electric power plant, 45 x 73 ft., to cost \$35,000. H. K. Graf, Chemical Building, St. Louis, is architect.

A manual-training department will be installed in the three-story and basement high school to be built at Sapulpa, Okla., estimated to cost \$125,000. Jewell Hicks, 19½ West Main Street, Oklahoma City, Okla., is architect.

The Kenyon Brick & Tile Co., 2700 West Tenth Street, Oklahoma City, Okla., is planning for the erection of a new plant addition to increase the capacity to about 40,000 bricks daily. At a later date, other extensions will be made to more than double this output. A. W. Kenyon is president.

The Fountain City Lumber & Body Co., Chattanooga, Tenn., recently organized, has acquired the plant of the Fountain City Mill & Lumber Co. Plans are under way for enlargements, to include the installation of a department for the manufacture of automobile bodies. The mill of Brantley Brothers has also been secured and the equipment will be removed to the Fountain City plant with additional machinery to be purchased. J. R. Brantley is president and J. V. Brantley, secretary and treasurer.

Inquiries for two presses for blanking and light forming, with about 36 x 72 in. bed between housings, have been received from the Niedringhouse Metalware Corporation, Goodfellow and Natural Bridge Avenues, St. Louis.

## Canada

Toronto, Nov. 27.

MACHINE tool sales are well up to expectations and inquiries indicate a brisk demand for equipment with the coming of the new year. November business compares very favorably with that of the previous month. Automobile manufacturers are entering the market and are sending out inquiries for equipment for additions which are now under way. The Ford Motor Co. of Canada will require approximately \$75,000 worth of equipment for a machine shop at Ford, Ont., and for a new assembling plant to be erected on Danforth Avenue, Toronto. The Durant Motor Co., Leaside, will require considerable equipment for an addition now under way. The General Motors Corporation, Oshawa, Ont., proposes to make improvements and extensions to its various plants there and will require considerable equipment.

Both the Canadian National Railways and the Canadian Pacific Railway are buying in a small way for replacement purposes for various car shops, and in addition to present requirements builders look for more extensive orders from this source for car shops and repair plants to be erected in western Canada. Makers of electrical equipment report good orders being booked and others in prospect.

The plant of the Stephen Brick Co., Ltd., Prince William Street, St. John, N. B., was destroyed by fire with a loss of \$100,000 to building and equipment.

The Thompson Motor Supplies, Ltd., 415 Queen Street West, Toronto, proposes to erect a factory at Acton, Ont., to cost \$15,000.

James Stutt & Sons, West Flamboro, Ont., are contemplating erecting a lumber mill at Dundas, Ont., and are interested in equipment.

The Goderich Elevator & Transit Co., Goderich, Ont., will build an addition to its grain elevator to cost \$250,000.

The Electropax Mfg. Co., Mount Dennis, Ont., whose plant was recently destroyed by fire with a loss of \$100,000, will rebuild and will require new machinery and equipment.

Bids will be called at an early date for the erection of an addition to a grain elevator at Port Arthur, Ont., to cost \$300,000 for Parrish & Heimbecker, Ltd., 614 Grain Exchange, Winnipeg.

The MacDonald Mfg. Co., Ltd., 145 Spadina Avenue, Toronto, Ont., manufacturers of paper cartons, etc., has awarded the general contract to Hugh Walker, 230 Langley Avenue, Toronto, for a factory to cost \$150,000. H. H. Babcock, 277 Sackville Street, is architect.

# Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

## Iron and Soft Steel Bars and Shapes

<b>Bars:</b>	
Refined iron bars, base price .....	3.04c.
Swedish bars, base price .....	7.50c.
Soft steel bars, base price .....	3.04c.
Hoops, base price .....	4.39c.
Bands, base price .....	3.84c.
<b>Beams and channels, angles and tees</b>	
3 in. x ¼ in. and larger, base .....	3.14c.
Channels, angles and tees under 3 in. x ¼ in., base .....	3.04c.

## Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger .....	3.10c.
(Smooth finish, 1 to 2½ x ¼ in. and larger) ..	3.30c.
Toe-calk, ½ x ¾ in. and larger .....	4.15c.
Cold-rolled strip, soft and quarter hard ..	6.75c. to 7.25c.
Open-hearth spring steel .....	4.00c. to 6.00c.
<b>Shafting and Screw Stock:</b>	
Rounds .....	3.90c.
Squares, flats and hex .....	4.40c.
Standard cast steel, base price .....	15.00c.
Extra cast steel .....	18.00c.
Special cast steel .....	23.00c.

## Tank Plates—Steel

¼ in. and heavier .....	3.14c.
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## Sheets

### Blue Annealed

	Per Lb.
No. 10 .....	4.19c.
No. 12 .....	4.24c.
No. 14 .....	4.29c.
No. 16 .....	4.39c.

### Box Annealed—Black

	Soft Steel C. R. One Pass, Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20 .....	4.30c. to 4.70c.	.....
Nos. 22 and 24 .....	4.35c. to 4.75c.	5.00c.
No. 26 .....	4.40c. to 4.80c.	5.05c.
No. 28 .....	4.50c. to 4.90c.	5.15c.
No. 30 .....	4.75c. to 5.15c.	.....

No. 28 and lighter, 36 in. wide, 10c. higher.

### Galvanized

	Per Lb.
No. 14 .....	4.60c. to 5.00c.
No. 16 .....	4.75c. to 5.15c.
Nos. 18 and 20 .....	4.90c. to 5.30c.
Nos. 22 and 24 .....	5.05c. to 5.45c.
No. 26 .....	5.20c. to 5.60c.
No. 27 .....	5.35c. to 5.75c.
No. 28 .....	5.50c. to 5.90c.
No. 30 .....	6.00c. to 6.40c.

No. 28 and lighter, 36 in. wide, 20c. higher.

## Welded Pipe

### Standard Steel

	Black	Galv.
½ in. Butt... ..	—50	—42
¾ in. Butt... ..	—55	—44
1-3 in. Butt... ..	—57	—44
2½-6 in. Lap... ..	—54	—41
¾ in. Lap... ..	—50	—26
9-12 in. Lap... ..	—46	—25

### Wrought Iron

	Black	Galv.
½ in. Butt... ..	—11	+13
¾ in. Butt... ..	—17	—1
1-1½ in. Butt... ..	—20	—2
2 in. Lap... ..	—14	+2
2½-6 in. Lap... ..	—18	—2
7-12 in. Lap... ..	—10	+6

## Steel Wire

BASE PRICE\* ON NO. 9 GAGE AND COARSER Per Lb.

Bright basic .....	4.75c. to 5.00c.
Annealed soft .....	4.75c. to 5.00c.
Galvanized annealed .....	5.40c. to 5.65c.
Coppered basic .....	5.40c. to 5.65c.
Tinned soft Bessemer .....	6.40c. to 6.65c.

\*Regular extras for lighter gage.

## Brass Sheet, Rod, Tube and Wire

### BASE PRICE

High brass sheet .....	19½c. to 20½c.
High brass wire .....	20 c. to 21 c.
Brass rod .....	17 c. to 18 c.
Brass tube, brazed .....	26½c. to 27½c.
Brass tube, seamless .....	23 c. to 23½c.
Copper tube, seamless .....	25½c. to 26 c.

## Copper Sheets

Sheet copper, hot rolled, 24 oz., 22c. to 23c. per lb. base.
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

## Tin Plates

Bright Tin	Grade	Grade	Coke—14-20	Primes	Wasters
	"AAA"	"A"			
	Charcoal	Charcoal			
	14x20	14x20			
IC..	\$10.00	\$8.50	80 lb...	\$6.05	\$5.80
IX..	11.50	10.00	90 lb...	6.15	5.90
IXX..	13.00	11.25	100 lb...	6.25	6.00
IXXX..	14.25	12.50		IC..	6.40
IXXXX..	16.00	14.00		IX..	7.40
				IXX..	8.40
				IXXX..	9.40
				IXXXX	10.40
					10.15

## Terne Plates

8-lb. coating, 14 x 20

100 lb. ....	\$7.00
IC .....	7.25
IX .....	7.50
Fire door stock .....	9.00

## Tin

Straits pig .....	39c.
Bar .....	45c. to 50c.

## Copper

Lake ingot .....	15½c.
Electrolytic .....	15 c.
Casting .....	14½c.

## Spelter and Sheet Zinc

Western spelter .....	8½c.
Sheet zinc, No. 9 base, casks .....	10¼c. open 10½c.

## Lead and Solder\*

American pig lead .....	8c. to 8½c.
Bar lead .....	9c. to 10c.
Solder, ½ and ½ guaranteed .....	27½c.
No. 1 solder .....	26c.
Refined solder .....	23½c.

\*Prices of solder indicated by private brand vary according to composition.

## Babbitt Metal

Best grade, per lb. ....	75c.
Commercial grade, per lb. ....	85c.
Grade D, per lb. ....	25c.

## Antimony

Asiatic .....	7½c. to 8½c.
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## Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. ....	25c. to 27c.
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## Old Metals

Business is fair and the market is steady. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible .....	12.00
Copper, heavy wire .....	11.50
Copper, light and bottoms .....	9.50
Brass, heavy .....	6.50
Brass, light .....	5.50
Heavy machine composition .....	8.75
No. 1 yellow brass turnings .....	7.00
No. 1 red brass or composition turnings .....	8.00
Lead, heavy .....	5.75
Lead, tea .....	4.50
Zinc .....	4.50



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